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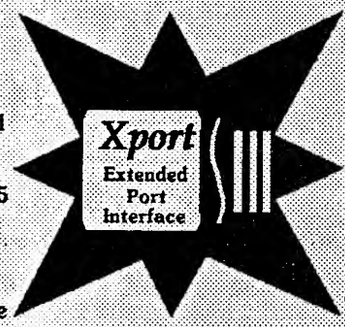

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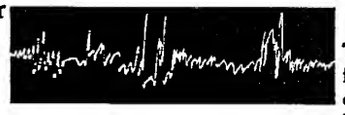

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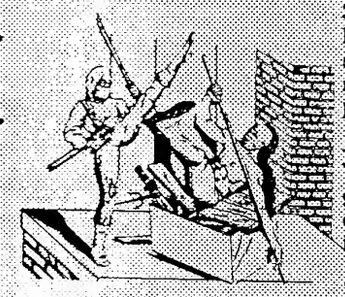

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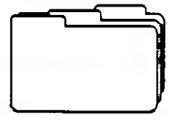

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As we go to press . . .

Believe it or not we are just about ready to catch up on your late arriving magazines. The March/April edition is just about ready to go to press with a super program for all of you who enjoy stargazing! Our column by Claude Giguere "en Francais" will be back next month and for all of you C.C.B.M.S. readers Jim says we will have more to come in May and June. Randy Krippner finishes his Painless OS9 column and in May/June we will be starting our new column on PASCAL. I'll be in Rockville, MD attending the Genie Sysop Convention at the end of March. Starting in the next issue we will begin to throw our support behind Genie and the Tandy/CoCo Round Table they offer. See you next month!

From The Desk Of . . .

Ted and Darlene Paul

It is 1990 and a new year, and depending on who you talk to it is either the last year of the decade of the 80's or the first year of the decade of the 90's. For my Color Computer it is just another year of doing business, and keeping in contact with many of you on the Hayes BBS.

Goodbye and Hello

One change that has occurred is that I am no longer a subscriber to CompuServe. My thanks to Dan Robins, Mike Ward, Steve Wegert and Wayne Day for all their help in the past. CompuServe provides a tremendous amount of information not only on the Color Computer, but on hundreds of other areas of interest. If you have a CompuServe node (phone number) in your local calling area you should give it a try. Radio Shack carries a start up kit for about $29.95 that you can use with your Color Computer and gives you a $25.00 usage credit.

You will find me checking in will be the Hayes BBS at (404) 446-6336. In operation 24 hours a day the BBS is provided at no charge by the Hayes Modem Company. You can leave private E-Mail via the Lounge selection and public messages in the Color Computer SIG. Kent Pirkle is the Color Computer Sysop and Randy Cooper the Hayes Co. Sysop.

Back Issue Information

One project that has been finished is a complete list of all of our back issues. The list is printed here in this issue and is right in the middle of the magazine. On either side of the center pages are *Clipboard* ads. You can remove the center pages without losing any editorial material.

The list shows that we have printed 14 editions spanning two plus years. We have printed 212 articles including reviews. Of the 212 articles, reviews make up 30 percent of what we have presented. We have printed articles on a wide area of interest including commentaries, database philosophies and readers letters. We have printed programs in BASIC, Machine Language, "C", BASIC 09, Pascal and OS9. I am not sure, but I think we have printed more articles on the Color Computer and Ham Radio than any other Color Computer magazine. My thanks to Mike Dooley and Jerry Murphy. In the next issue we will publish what I believe to be the largest, most complex hardware and software article yet attempted by a Color Computer magazine.

Through the courtesy of Kalbach Publishing, we have been granted the rights to reprint an article which first appeared in issue 38 of Telescope Making Magazine. I won't say more, but you should be able to read between the lines.

Important Information

To save space I usually don't put a blank space between paragraphs or sections, but this is important and so I wanted it to stand out a bit. Two important areas need to be addressed so here goes:

The first area of concern regards how we mail *CoCo Clipboard Magazine.* In order to keep our costs, and frankly your costs as low as possible, we decided from the beginning to mail your magazine via third class mail. Many, many magazines are mailed second class but it would actually take more time and therefore cost more to do this for *Clipboard.* While slower than second class, third class does get the job done in 98% of all situations. Where it doesn't can be boiled down into two areas - poor service from post offices which regard third class as "junk" mail and poor addresses received from our subscribers.

Point in case from the Post Office. I was mailing some rather mundane stuff not too long ago and I overheard a conversation between a carrier and what I suppose was a supervisor. "What difference does it make," said the carrier, "they just throw it out anyway, we're just doing them a favor." What the supervisor was saying wasn't clear, but the gist of it was that the carrier was wrong and these items had to be delivered. Obviously the carrier disagreed. I went straight to the postmaster and made my feelings known in no uncertain terms.

The second problem is getting the right address. Most folks have an address that

From The Desk continued on 5

From The Desk continued from 4

looks like this:

Joe Dokes
875 Cleveland Ave.
New York, NY 10000

Sometimes a line is added for an apartment number. However many folks have complex addresses which involve building, condos, rural route delivery, Star Routes and other types of addressing. What is common and normal in your area might be totally unusual for us. Your address must look something like this:

Your First Name, Last Name
Your Street or RR #
Your Box Number / Star Route or
Bldg # / Apt #
Your City, State, Zip

For example:

Joe Dokes
RR# 1
Box 455 - A
Westerly, VA 99999

Remember when Mrs. Frump or Sister Theresa would beat on you for your lousy penmanship? Well some of you still need to hear it again. If we can't read it, decipher it, have it translated or other wise figure out where you are we can't send you a magazine. If your hand writing looks like you live in an earthquake zone and you tend to write things while the perched on an out of balance washing machine in the spine cycle do me a favor - CALL IN YOUR ORDER or have somebody write it out for you! I will apologize now for those of you who take umbrage at this, but there are times when it really is difficult to read your writing.

The second point concerns changes in your address. In order to get your magazine to you we must have your current address. The Post Office will not forward third class mail. If you move, you must send us a change of address card. They are available at every post office and postal sub-station in the country. Please send it to as soon as you can. If we receive your change of address AFTER the magazine is mailed we cannot send you a free replacement issue. The question then becomes, "when is the magazine mailed?" You can assume that we will mail the magazine by the third week of a publication month. I know we have been late, but we are working to make up this time lag as fast as possible. Therefore we need your address change by the first week of a publication month.

Finally

Two other last minute notes have crossed my desk in the last few days... Tothian Software in Pennsylvannia has closed up shop. Jim Mortimer hung up the "Gone Fishing" sign on December 31st. Our thanks to Jim for his past support of *Clipboard* and the CoCo Community in general. On a more positive note TOMELA*CO the people who bring you Bowling League Secretary continue their excellent support of their product. Tom Barnett has sent me another copy of their current newsletter. Many of you complain about lousy service and poor support from software houses. TOMELA*CO is not one of those companies. If you are a bowler and must keep stats on your league then Bowling League Secretary is a program. If you're looking for a way to make a few bucks with your CoCo then Bowling League Secretary might be the way for you to do so. Be sure to check out their ad in this issue and give Tom a call for full details.

That's all for this edition.

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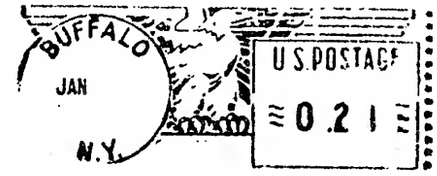

...About those reviews!

Dear Ted & Darlene:

Here's my check for a one year subscription and back issues.

Best wishes on your venture. I wish I had heard about it earlier. What struck an immediate chord when I read your flier (which came with an order from Orion) was the promise of real reviews. I hope Clipboard fills the bill!

Bill Condie
New York, NY

Dear Bill:

Sometimes running those long reviews can be frustrating because there are so many things we'd like to review in each issue and we never have enopugh room. But the overwhelming opinions of our readers has been for longer, more indepth reviews. I think you'll like what is in this issue.

.. A call to arms?

Dear Ted:

I read your editorial in the July/ August 1989 issue with interest. I hope I'm wrong, but I'm afraid your call to arms may have come a couple of years too late.

You chide users for thinking of the CoCo as "poor cousin" to some other system. Yet, the party most guilty of "poor cousin thinking" is Tandy itself.

I was surprised to find that the CoCo was listed in the 1990 catalog. This is somewhat heartening to users like myself who expected the CoCo to be discontinued this year.

The CoCo used to be turned on with one or two games running in the stores. Then it went downhill so where it would just be turned on and kids would come in and type obscenities on the scree. Now the CoCo sits in a dusty corner. It is not even turned on anymore. There are only a few pieces of software available. I think most of us quit visiting Radio Shack to "see what's new" long ago.

Let's take a look at the third party market. The list of vendors who have quit or moved on to other machines whould read like a Who's Who of CoCo supporters. How many of these would still be around if Tandy actively solicited their help in making the CoCo a success. It is time for Tandy to "seize the day". There are several steps that could keep the CoCo viable for years.

First, they should sell *Clipboard* and RAINBOW in their stores. It would get CoCo owners back into the stores at least once a month.

Second they should resume stocking more software titles. Where interest exists for a program they should get someone to write it.

They should bring back the Multipak Interface and sell third party hardware like Burke & Burkes Hard Drive interface.

I have owned a CoCo for 8 years and am tired of watching Tandy treat the CoCo as a poor cousin. In Popeye's imortal words "that's all I can stand 'cause I can't stands no more."

Dave Jenkins
Evansville, IN

Dear Dave:

I too am troubled at finding the CoCo in the off position when entering a Radio Shack. Here in our area the manager does a good job on the CoCo and software. But many major malls I have visited they don't. It's too bad too. A small CoCo system at $400-500 is not a bad sale. It's got to be easier to move 3 CoCo systems at that price than 3 PC systems at $1600. especially if the customer just getting started.

CoCo Clipboard Magazine

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Plumbers Helper

Bill Wills

It's Saturday and you decided to fix that leaky faucet in the upstairs bathroom. You head for the basement to shut off the water, only to face a tangled mess of valves and copper pipes zigzagging thru the basement ceiling.

Which valve do you turn off? You call out to your wife, asking her for help. You hear an "Aargh, what do you want now? " You tell her you need her to go upstairs to the bathroom and tell you when the water is off. After turning off and on five or more valves, you think you hear her yelling down to you. You yell to her "Is the water off?" "Yes it's off, can't you hear." Now, you can finally start fixing that leaky faucet.

The PLUMBER'S HELPER will eliminate this problem for you. It will label all your valves with ID tags showing what they control. Yes, you will need the help of your wife one more time.

To start the program, run "PLUMBER". A main menu will appear listing the programs's options.

SET-UP SHEET

This is the first option you will select. You will be asked for the number of valves in your basement. Once you have given the program this information, you will be told to put your printer on line and press ENTER when ready.

The program will print out a questionnaire that will ask you what each valve controls and whether it is for hot water, cold water or gas. At the bottom of the sheet the program will print out strips. Each strip will be labeled Valve 1, Valve 2, etc. Cut out each strip. These strips will be used to temporarily identify each valve.

Now, that you have your set-up sheet, you are ready to go to the basement and find out what each valve controls. Just write the information down on the sheet-up sheet for each valve and put the corresponding strip on the valve. You will need the help of your wife or a friend.

ENTER VALVES

Now that you have all your information written down about each valve, select this option. You will be asked for a file name of 8 characters or less. The program will add the extension. The program will then ask you to enter the information you have on your set-up sheet. The program will automatically store this information to your disk.

PRINT ID TAGS

This option will print out labels with all the information on it for each valve. You will be asked for the file name that you have your valve data stored in. The program will then tell you to put mailing labels in your printer and to press ENTER when ready.

Once you have your labels printed out, attach them to a piece of poster board or thin cardboard. Cut out each label and punch a hole in the center right hand side. You can fasten the labels to each valve by threading a piece of string or wire tie thru the hole and attaching it just behind the valve on the copper pipe. If you want to add extra protection to the labels, wrap each one with clear contact paper.

ADD VALVES

This option will allow you to add valves to your list at a later date if you do any remodeling. You can also use it to enter any valves that you forgot to enter the first time.

The program will ask you for the file name that you want to update. Next, it will ask you to enter the number of valves you want to add. It will then tell you to enter the information about the valves, just like you did in the enter valve option. You will then be prompted to put labels in your printer and press ENTER when ready to print.

NOTES

The baud rate is set at 600 baud. If your printer is capable of higher baud rates, change line 80 to:

```
POKE 150,1  (for 9600 baud)
POKE 150,18 (for 2400 baud)
POKE 150,40 (for 1200 baud)
```

continued on 9

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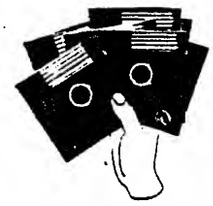
The printer used with this program is a Star NX1000. The control codes are as follow:

Line 740 CHR$(12) Form Feed
Line 1640 CHR$(27);CHR$(87);CHR$(49) Expanded On

Line 1690 CHR$(27);CHR$(87);CHR$(48) Expanded Off

I hope PLUMBER'S HELPER will make your repair work a little bit easier, I know it helped me. My wife think the program is great too.

(Any questions about this program may be directed to the author at 202 Meadowbrook Avenue, Boardman, OH 44512. Please enclose a SASE for a replay.)



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```
10 '
20 'THE PLUMBER'S HELPER
30 'BY WILLIAM WILLS
40 '
50 '(C) OCTOBER 1989
60 '
70 GOTO 1920
80 CLEAR10000:POKE150,87:CL$=STR
ING$(29,32):GOTO460
90 '
100 '**** SUBROUTINES ****
110 '
120 'CLEAR TEXT FROM SCREEN
130 '
140 Y=0:FORY=258 TO 450 STEP32
150 PRINT@Y,CL$;
160 NEXT Y
170 RETURN
```


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To order or for more information, contact:

RJR
SystemS
P.O. Box 560 Copiague, N.Y. 11726

continued from 9

```
180 PRINT@258,CL$
190 RETURN
200 PRINT@162,CL$;
210 RETURN
220 Y=0:FOR Y=258 TO 290 STEP32
230 PRINT@Y,CL$;
240 NEXT Y
250 RETURN
260 PRINT@130,STRING$(28,32);:RE
TURN
270 PRINT@162,STRING$(10,32);
280 RETURN
290 '
300 'OPEN FILES
310 '
320 CLS:PRINT@225,"ENTER 8 CHARA
CTERS OR LESS"
330 PRINT@257,"DON'T INCLUDE EXT
ENTION"
340 PRINT@324,;:LINEINPUT"ENTER
FILE NAME ";F$
350 IF LEN(F$)>8 GOTO 390
360 F$=F$+".PLB"
370 OPEN"D",#1,F$,36
380 RETURN
390 PRINT@351,"FILE NAME TOO LON
G"
400 PRINT@383,"PLEASE ENTER AGAI
N"
410 FOR Y=1 TO 1000:NEXT Y
420 GOTO 320
430 '
440 '**** MAIN MENU ****
450 '
460 CLS:PRINT@39,"THE PLUMBER'S
HELPER"
470 PRINT@102,"WHAT DO YOU WANT
TO DO?"
480 PRINT@167,"1) SET UP SHEET"
490 PRINT@199,"2) ENTER VALVES"
500 PRINT@231,"3) PRINT ID LABEL
S"
510 PRINT@263,"4) ADD VALVES"
520 PRINT@295,"5) END PROGRAM"
530 PRINT@357,"SELECT BY NUMBER
(1-5)"
540 PRINT@420,"IF THIS IS THE FI
RST TIME":PRINT@452,"RUNNING PRO
GRAM, SELECT 1."
550 A$=INKEY$:IF A$=""THEN 550
560 ON INSTR("12345",A$) GOSUB 6
10,840,1440,1730,1860
570 GOTO 460
580 '
590 '**** SET UP SHEET ****
600 '
610 CLS:PRINT@100,;:LINEINPUT"EN
TER NUMBER OF VALVES ";V$
620 V=VAL(V$)
630 CLS:PRINT@228,"PUT YOUR PRIN
TER ONLINE"
640 PRINT@260,"PRESS ANY KEY WHE
N READY"
650 IF LEN(INKEY$)=0 THEN 650
660 PRINT#-2,TAB(25);"THE PLUMBE
R'S HELPER SET UP SHEET":PRINT#-
2,STRING$(80,42)
670 PRINT#-2,"NUMBER OF VALVES "
V$:PRINT#-2:PRINT#-2
680 X=0:FOR X=1 TO V
690 PRINT#-2,"VALVE# ";X:PRINT#-
2
700 PRINT#-2,"ROOM/ITEM";:PRINT#
-2,STRING$(40,45)
710 PRINT#-2,"( ) HOT WATER   (
) COLD WATER   ( ) GAS":PRINT#-2
720 NEXT X
730 PRINT#-2,CHR$(12)
740 PRINT#-2,"THESE ARE YOUR TEM
PORARY LABELS. CUT THEM OUT AND
PLACE ON VALVE."
750 PRINT#-2,STRING$(79,45)
760 X=0:FOR X=1 TO V
770 PRINT#-2,"VALVE# ";X
780 PRINT#-2,STRING$(79,45)
790 NEXT X
800 RETURN
810 '
820 '**** ENTER VALVES ****
830 '
840 GOSUB 320
850 CLS:PRINT@228,;:LINEINPUT"EN
TER NUMBER OF VALVES ";V$
860 V=VAL(V$):Y=1:R=0
870 CL$=STRING$(30,32)
880 CLS:PRINT@33,CHR$(129);STRIN
G$(28,131);CHR$(130);
890 PRINT@65,CHR$(133);"VALVE# "
;:PRINT@94,CHR$(138);
900 FOR X=97 TO 186 STEP32
910 PRINT@X,CHR$(133);:PRINT@X+2
9,CHR$(138)
920 NEXT X
930 PRINT@193,CHR$(132);STRING$(
28,140);CHR$(136);
940 FOR R=Y TO V
950 PRINT@72,R;
960 PRINT@258,"ENTER ROOM/ITEM":
PRINT@130,;:LINEINPUT I$:PRINT@1
58,CHR$(138)
970 IF E=1 GOTO 1290
980 GOSUB 180
990 PRINT@258,"WHAT DOES VALVE C
ONTROL?"
1000 PRINT@325,"1) HOT WATER"
1010 PRINT@357,"2) COLD WATER"
1020 PRINT@389,"3) GAS"
1030 PRINT@450,"SELECT BY NUMBER
S (1-3)
1040 A$=INKEY$:IF A$=""THEN 1040
1050 ON INSTR("123",A$) GOTO 107
0,1080,1090
1060 GOTO 1040
1070 C$="HOT WATER":GOTO 1100
1080 C$="COLD WATER":GOTO1100
1090 C$="GAS"
1100 PRINT@162,C$;
1110 IF E=1 GOTO 1290
1120 GOSUB 140
1130 PRINT@258,"PRESS <ENTER> TO
 CONTINUE OR"
1140 PRINT@290,"<C> TO CORRECT."
1150 A$=INKEY$:IF A$=""THEN 1150
1160 IF A$=CHR$(13) THEN 1190
1170 IF A$="C"THEN 1280
1180 GOTO1130
1190 R$=STR$(R)
1200 WRITE#1,R$,I$,C$
1210 PUT#1,R
1220 GOSUB 220
1230 GOSUB 260
1240 GOSUB 270
1250 NEXT R
1260 CLOSE#1
1270 RETURN
1280 GOSUB 140:E=1
1290 PRINT@258,"WHAT DO YOU WANT
 TO CORRECT?"
1300 PRINT@325,"1) ROOM/ITEM"
1310 PRINT@357,"2) WHAT VALVE CO
NTROL"
1320 PRINT@389,"3) RETURN"
1330 PRINT@450,"SELECT BY NUMBER
 (1-3)"
1340 A$=INKEY$:IF A$=""THEN 1340
1350 ON INSTR("123",A$) GOTO 137
0,1380,1390
1360 GOTO1340
1370 GOSUB260:GOSUB140:GOTO960
1380 GOSUB270:GOSUB140:GOTO990
1390 GOSUB140:E=0:GOTO1130
1400 GOTO1340
1410 '
1420 '**** PRINT ID LABELS ****
1430 '
1440 GOSUB 320
1450 R=0
1460 CLS:PRINT@228,"DO YOU HAVE
LABELS IN"
1470 PRINT@260,"YOUR PRINTER (Y/
N)?"
1480 A$=INKEY$:IF A$=""THEN1480
1490 IF A$="N"OR A$="n"THEN 1520
1500 IF A$="Y"OR A$="y"THEN 1560
1500 IF A$="Y"OR A$="y"THEN 1560
1510 GOTO1480
1520 CLS:PRINT@230,"STOP AND PUT
 LABELS"
1530 PRINT@262,"IN YOUR PRINTER.
"
1540 PRINT@324,"PRESS ANY KEY WH
EN READY."
1550 IF LEN(INKEY$)=0 THEN1550
1560 CLS:PRINT@228,"PUT YOUR PRI
NTER ONLINE"
1570 PRINT@260,"PRESS ANY KEY WH
EN READY."
1580 IF LEN(INKEY$)=0 THEN1580
1590 R=R+1
1600 GET#1,R
1610 INPUT#1,R$,I$,C$
1620 CLS:PRINT@228,"NOW PRINTING
 VALVE# ";R
1630 PRINT#-2:PRINT#-2,CHR$(27);
CHR$(87);CHR$(49);"VALVE# ";R$:P
RINT#-2
1640 PRINT#-2,I$
1650 PRINT#-2,C$:PRINT#-2
1660 IF LOF(1)<>R THEN 1590
1670 CLOSE#1
1680 PRINT#-2,CHR$(27);CHR$(87);
CHR$(48)
1690 RETURN
1700 '
1710 '**** ADD VALVES ****
1720 '
1730 CLS:A=1
1740 PRINT@288,"HOW MANY VALVES
ARE"
1750 PRINT@260,;:LINEINPUT"YOU G
OING TO ADD?";V$
1760 GOSUB320
1770 V1=VAL(V$):Y=(LOF(1)+1):V=V
1+(Y-1)
1780 GOSUB870
1790 OPEN"D",#1,F$,36
1800 Y=LOF(1):R=Y-V1
```

continued on 16

Bible Quiz

Sebastian LaSpada

Editors Note: We've had many requests for programs for CoCo 2 users as well as something other than "business oriented" material. This program is listed here in this edition for the CoCo 2. ClipDisk has BOTH a CoCo 2 and CoCo 3 versions.

Bible Scripture Quiz is a neat and colorful program written for the 64K CoCo 2 or CoCo 3. It contains pleasing block graphics and sound. It is a quiz on important Bible Scriptures, giving the correct answer for a wrong entry, the number of correct answers at the end of the quiz and a graphic reward if your final score is above 79. The program contains 53 questions.

If you run the CoCo 3 version of the program it is suggested that your type in PALETTE RGB before running the program to insure that the computer will display the yellow and magenta colors.

To run Bible Scripture Quiz carefully type in the program lines and then save to tape or disk. The program is self prompting, so simply follow the on screen instructions.

It is of utmost importance that you spell your answers correctly, or the computer will not accept them as correct. The instructions will show you how to type in Scripture verses properly. The more common form of John 3:16 should be typed in as John 3/16.

If you type a correct answer, the program will present you with a brief, colorful, random "CORRECT" screen. If you type an incorrect answer, the program will then give you the correct answer and the quiz will continue. At the end of the quiz, the program will grade your effort.

Sunday School teachers, AWANA Leaders or youth pastors can easily change any of the scripture references and verses. You'll find the DATA statements clearly marked in the program. Be sure to follow the format shown in order to have the program run properly.

I hope you will enjoy the Bible Scripture Quiz. If you have any comments or questions please write to me at 531 Main St., Dunkirk, NY 14063. Please include a stamped self-addressed envelope for a prompt reply.

This program is available on *ClipDisk*. A single issue is just $9.95, a full year is only $49.95. Phone orders are accepted at (716) 679-0126 - please have your credit card ready. You may also order by mail by enclosing your check or money order to *CoCo Clipboard Magazine*. Our address is 3742 U.S. 20, Box 3, Fredonia, NY 14063 U.S.A. Slightly higher prices for overseas orders.

```
10 CLS0:SOUND 200,2:FOR D=1TO100
:NEXT:SOUND 200,6
20 CLS0:FOR D=1TO400:NEXT:CLS5:F
OR D=1TO7:NEXT:CLS0:FOR D=1TO400
:NEXT:CLS5:FOR D=1TO10:NEXT:CLS0
:FOR D=1TO500:NEXT
30 CLS0:FOR D=1TO400:NEXT
40 FOR P=0TO8:CLS(P):FOR T=1TO50
:NEXT T,P
50 CLS0:SOUND1,10
60 '****** OPENING SCREEN ******
70 PMODE 4,1:PCLS:SCREEN 1,0
80 FOR I=2TO126STEP2:CIRCLE(128,
96),I,,.68:NEXT
90 SOUND 10,6
100 FOR X=2TO126STEP2:CIRCLE(128
,96),X,,1.7:NEXT
110 SOUND50,6:PCLS:CLS0:FOR H=23
8TO239:PRINT@H,CHR$(140);:NEXT
120 CLS0:SOUND150,5:FOR D=1TO400
:NEXT:CLS2:FOR D=1TO5:NEXT:CLS0:
FOR D=1TO400:NEXT:SOUND150,5
130 FOR D=1TO1000:NEXT
140 FOR X=1TO35
150 F=INT(RND(0)*8)+1
160 SET(RND(64)-1,RND(30)+1,F)
170 SOUND 242,1:NEXT X
180 SOUND210,6:FOR D=1TO800:NEXT
190 PRINT@224,"          BIBLE SCR
IPTURES          ";
200 FOR D=1TO2000:NEXT
210 FOR H=192TO223:PRINT@H,CHR$(
140+16);:NEXT
220 FOR H=256TO287:PRINT@H,CHR$(
131+16);:NEXT
230 SOUND175,5:FOR D=1TO1000:NEX
T
240 GOSUB2480
250 T=0
260 CLS(RND(9))-1
270 SOUND 160,3:SOUND200,6
280 Y=RND(7)*16:FOR H=32TO63:PRI
NT@H,CHR$(131+Y);:NEXT:FOR H=224
TO255:PRINT@H,CHR$(140+Y);:NEXT
290 PRINT@64,"  WOULD YOU LIKE T
HE QUESTIONS      TO APPEAR AT RA
NDOM (WITH       SOME REPETITIONS
), OR WOULD    ";
300 PRINT@160,"   YOU LIKE TO AN
SWER THEM        IN ORDER, WITH N
O REPETITIONS? ";:FOR D=1TO2000:
NEXT
310 Z=RND(7)*16:FOR H=256TO287:P
RINT@H,CHR$(140+Z);:NEXT:FOR H=3
52TO383:PRINT@H,CHR$(131+Z);:NEX
T
320 PRINT@288,"  IF AT RANDOM, T
YPE 'RANDOM'    ";
330 PRINT@320,"   IF IN ORDER, T
YPE 'ORDER'     ";
340 SOUND 185,5
350 FOR H=352TO384:PRINT@H,"";:N
EXT
360 INPUT G$
370 IF G$="RANDOM"THEN 950
380 IF G$="ORDER"THEN 1920
```

continued on 12

continued from 11

```
390 IF G$<>"RANDOM" OR G$<>"ORDE
R"THEN FOR H=384TO415:PRINT@H,CH
R$(128);:NEXT:SOUND 10,6:GOTO 32
0
400 '****** BIBLE DATA ******
410 DATA I CORINTHIANS 1/26,FOR
YOU SEE YOUR CALLING--BRETHREN--
HOW THAT NOT MANY WISE MEN AFTER
    THE FLESH--NOT MANY MIGHTY--
NOT MANY NOBLE ARE CALLED...
420 DATA I CORINTHIANS 1/27,BUT
GOD HAS CHOSEN THE FOOLISH THING
S   OF THE WORLD TO CONFOUND THE
    WISE--AND GOD HAS CHOSEN THE
    WEAK THINGS OF THE WORLD TO
    CONFOUND THE THINGS WHICH AR
E   MIGHTY...
430 DATA I CORINTHIANS 1/28,...A
ND  BASE THINGS OF THE WORLD--AN
D   THINGS WHICH ARE DESPISED HA
S   GOD CHOSEN--TO BRING TO NOTH
ING THINGS THAT ARE...
440 DATA I CORINTHIANS 1/29,THAT
 NO FLESH SHOULD GLORY IN HIS PR
E-  SENCE.
450 DATA II TIMOTHY 1/7,FOR GOD
HAS NOT GIVEN US THE SPIRIT OF
FEAR--BUT OF POWER AND OF LOVE
AND OF A SOUND MIND.
460 DATA I CORINTHIANS 6/19,DO Y
OU  NOT KNOW THAT YOUR BODY IS T
HE  TEMPLE OF THE HOLY SPIRIT WH
ICH IS IN YOU--WHICH YOU HAVE OF
    GOD--AND YOU ARE NOT YOUR OW
N?
470 DATA I JOHN 1/9,IF WE   CONF
ESS OUR SINS HE IS FAITHFUL AND
JUST TO FORGIVE US OUR SINS AND
TO CLEANSE US FROM ALL UN-  RIGH
TEOUSNESS.
480 DATA I JOHN 1/8,IF WE   SAY
THAT WE HAVE NO SIN WE DE-  CEIV
E OURSELVES AND THE TRUTH   IS N
OT IN US.
490 DATA MATTHEW 6/34,THERE-  FO
RE DO NOT BE ANXIOUS ABOUT    TO
MORROW--FOR TOMORROW WILL BE  AN
XIOUS FOR ITSELF.  LET THE    DA
Y'S OWN TROUBLE BE SUFFICIENT FO
R THE DAY.
500 DATA JOHN 11/25,I AM    THE
RESURRECTION AND THE LIFE-- HE W
HO BELIEVES IN ME--THOUGH   HE D
IE--YET SHALL HE LIVE.
510 DATA REVELATION 3/8,I KNOW
YOUR WORKS--BEHOLD--I HAVE SET
BEFORE YOU AN OPEN DOOR--AND NO
MAN CAN SHUT IT--FOR YOU HAVE A
LITTLE STRENGTH--AND HAVE KEPT
MY WORD--AND HAVE NOT DENIED MY
NAME.
520 DATA REVELATION 18/4,...COME
 OUT OF HER MY PEOPLE--THAT YOU
 MAY NOT BE PARTAKERS OF HER
 SINS--AND THAT YOU RECEIVE NOT
 OF HER PLAGUES.
530 DATA I JOHN 3/4,WHOSO-  EVER
 COMMITS SIN TRANSGRESSES   ALSO
 THE LAW--FOR SIN IS THE    TRAN
SGRESSION OF THE LAW.
540 DATA MATTHEW 4/4,...MAN  SHA
LL NOT LIVE BY BREAD ALONE-- BUT
 BY EVERY WORD THAT PROCEEDS FRO
M THE MOUTH OF GOD.
550 DATA JAMES 1/5,IF ANY  OF YO
U LACK WISDOM--LET HIM ASK OF GO
D...
560 DATA MATTHEW 6/33,BUT     SE
EK YOU FIRST THE KINGDOM OF   GO
D AND HIS RIGHTEOUSNESS--AND  AL
L THESE THINGS SHALL BE ADDED UN
TO YOU.
570 DATA I CORINTHIANS 2/11,FOR
    WHAT MAN KNOWS THE THINGS OF
 A  MAN--SAVE THE SPIRIT OF MAN
    WHICH IS IN HIM.  EVEN SO TH
E   THINGS OF GOD KNOWS NO MAN--
BUT THE SPIRIT OF GOD.
580 DATA PHILIPPIANS 2/12,WORK
  OUT YOUR OWN SALVATION WITH
  FEAR AND TREMBLING.
590 DATA DEUTERONOMY 16/16,THREE
   TIMES A YEAR SHALL ALL YOUR
   MALES APPEAR BEFORE THE LORD
   YOUR GOD IN THE PLACE WHICH H
E  SHALL CHOOSE...AND THEY SHALL
   NOT APPEAR BEFORE THE LORD
   EMPTY.
600 DATA II PETER 3/8,...ONE  DA
Y IS WITH THE LORD AS A THOU- SA
```

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Erich Sweaney Software

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continued from 12

```
ND YEARS--AND A THOUSAND      YE
ARS AS ONE DAY.
610 DATA JOHN 3/16,FOR GOD SO LO
VED THE WORLD THAT HE GAVE HIS O
NLY BEGOTTEN SON--THAT      WHOSO
EVER BELIEVES IN HIM        SHOUL
D NOT PERISH--BUT HAVE      EVERL
ASTING LIFE.
620 DATA II CORINTHIANS 6/14,BE
NOT  UNEQUALLY YOKED TOGETHER WI
TH   UNBELIEVERS--FOR WHAT FELLO
W-   SHIP HAS RIGHTEOUSNESS WITH
 UN- RIGHTEOUSNESS?
630 DATA REVELATION 12/10,...FOR
  THE ACCUSER OF OUR BRETHREN IS
  CAST DOWN--WHO ACCUSES THEM BE
- FORE OUR GOD DAY AND NIGHT.
640 DATA GALATIANS 5/22-23,BUT T
HE FRUIT OF THE SPIRIT IS LOVE--
   JOY--PEACE--LONGSUFFERING--
   GENTLENESS--GOODNESS--FAITH--
   MEEKNESS--TEMPERANCE--AGAINST
   SUCH THERE IS NO LAW.
650 DATA I THESSALONIANS 5/17,PR
AY    WITHOUT CEASING.
660 DATA ISAIAH 58/13,IF YOU  TU
RN AWAY YOUR FOOT FROM THE    SA
BBATH--FROM DOING YOUR OWN    PL
EASURE ON MY HOLY DAY--AND    CA
LL THE SABBATH A DELIGHT--AND SH
ALL HONOR HIM--NOT DOING YOUR OW
N WAYS...
670 DATA MATTHEW 6/14,FOR IF  YO
U FORGIVE MEN THEIR TRESPAS-  SE
S--YOUR HEAVENLY FATHER ALSO  WI
LL FORGIVE YOU.
680 DATA MATTHEW 6/15,BUT IF  YO
U DO NOT FORGIVE MEN THEIR    TR
ESPASSES--NEITHER WILL YOUR   FA
THER FORGIVE YOUR TRESPASSES.
690 DATA II TIMOTHY 2/15,STUDY
 TO SHOW YOURSELF APPROVED UNTO
 GOD--A WORKMAN THAT NEED NOT BE
 ASHAMED--RIGHTLY DIVIDING THE
 WORD OF TRUTH.
700 DATA MATTHEW 22/14,FOR    M
ANY ARE CALLED--BUT FEW ARE   C
HOSEN.
710 DATA II CORINTHIANS 4/4,IN W
HOM THE GOD OF THIS WORLD HAS BL
IN- DED THE MINDS OF THEM WHICH
BE- LIEVE NOT--LEST THE LIGHT OF
    THE GLORIOUS GOSPEL OF CHRIS
T-- WHO IS THE IMAGE OF GOD--SHO
ULD SHINE UNTO THEM.
720 DATA I CORINTHIANS 15/51,BE-
-    HOLD--I SHOW YOU A MYSTERY-
-WE  SHALL NOT ALL SLEEP--BUT WE
     SHALL ALL BE CHANGED.
730 DATA LUKE 6/38,GIVE--  AND I
T SHALL BE GIVEN TO YOU.   GOOD
MEASURE--PRESSED DOWN--    SHAKE
N TOGETHER...FOR THE MEA-  SURE
YOU GIVE WILL BE THE MEA-  SURE
YOU GET BACK.
740 DATA ACTS 2/38,REPENT  AND B
E BAPTIZED--EVERY ONE OF   YOU I
N THE NAME OF JESUS CHRIST FOR T
HE FORGINESS OF YOUR       SINS-
-AND YOU SHALL RECEIVE THE GIFT
OF THE HOLY SPIRIT.
750 DATA EXODUS 31/13,...MY   SA
BBATHS YOU SHALL KEEP--FOR IT IS
 A SIGN BETWEEN ME AND YOU    TH
ROUGHOUT YOUR GENERATIONS--   TH
AT YOU MAY KNOW THAT I AM THE LO
RD THAT SANCTIFIES YOU.
760 DATA I TIMOTHY 6/10,FOR THE
LOVE OF MONEY IS THE ROOT OF
ALL EVIL...
770 DATA MATTHEW 5/48,BE YOU  TH
EREFORE PERFECT--EVEN AS YOUR FA
THER WHICH IS IN HEAVEN IS    PE
RFECT.
780 DATA PROVERBS 14/12 & 16/25,
THERE   IS A WAY WHICH SEEMS RIG
HT UNTO A MAN--BUT THE END THERE
OF ARE  THE WAYS OF DEATH.
790 DATA REVELATION 3/10,BE-
 CAUSE YOU HAVE KEPT THE WORD OF
 MY PATIENCE--I ALSO WILL KEEP
 YOU FROM THE HOUR OF TEMPTATION
 WHICH SHALL COME UPON ALL THE
 WORLD...
800 DATA MATTHEW 6/24,NO MAN  CA
N SERVE TWO MASTERS--FOR      EI
THER HE WILL HATE THE ONE AND LO
VE THE OTHER--ELSE HE WILL    HO
LD TO THE ONE AND DESPISE THE OT
HER.  YOU CANNOT SERVE GOD    AN
D MAMMON.
810 DATA MATTHEW 28/19,GO YOU  T
HEREFORE AND TEACH ALL NA-     T
IONS--BAPTIZING THEM IN THE    N
AME OF THE FATHER AND OF THE   S
ON AND OF THE HOLY SPIRIT.
820 DATA JEREMIAH 10/3,FOR THE C
USTOMS OF THE PEOPLE ARE       V
AIN--FOR ONE CUTS A TREE OUT   O
F THE FOREST--THE WORK OF THE  H
ANDS OF THE WORKMAN WITH THE   A
XE.
830 DATA JEREMIAH 10/4,THEY    D
ECK IT WITH SILVER AND GOLD--  A
ND FASTEN IT WITH NAILS AND    W
ITH HAMMERS--THAT IT MOVE NOT.
840 DATA LUKE 21/36,WATCH   YOU
THEREFORE AND PRAY ALWAYS-- THAT
 YOU MAY BE ACCOUNTED WOR-  THY
TO ESCAPE ALL THESE THINGS  THAT
 SHALL COME TO PASS--AND TO STAN
D BEFORE THE SON OF MAN.
850 DATA ACTS 3/19,REPENT  YOU T
HEREFORE--AND BE CONVER-   TED--
THAT YOUR SINS MAY BE      BLOTT
ED OUT--WHEN THE TIMES OF  RESTI
TUTION SHALL COME FROM THE PRESE
NCE OF THE LORD.
860 DATA JOHN 8/32,AND YOU SHALL
 KNOW THE TRUTH--AND THE   TRUTH
 SHALL MAKE YOU FREE.
870 DATA JOHN 6/33,THESE   THING
S I HAVE SPOKEN UNTO YOU-- THAT
IN ME YOU MIGHT HAVE       PEACE
.  IN THE WORLD YOU SHALL  HAVE
TRIBULATION--BUT BE OF     GOOD
CHEER--I HAVE OVERCOME THE WORLD
.
880 DATA REVELATION 5/10,AND
 HAVE MADE US UNTO OUR GOD KINGS
 AND PRIESTS--AND WE SHALL REIGN
 ON THE EARTH.
890 DATA ROMANS 1/17,FOR      THE
REIN IS THE RIGHTEOUSNESS OF GOD
 REVEALED FROM FAITH TO       FAI
TH--AS IT IS WRITTEN--THE     JUS
T SHALL LIVE BY FAITH.
900 DATA PSALMS 133/1,BE-     HO
LD--HOW GOOD AND HOW PLEASANT IT
 IS FOR BRETHREN TO DWELL TO- GE
THER IN UNITY.
910 DATA JOB 42/5-6,I HAVE  HEAR
D OF YOU BY THE HEARING OF  THE
EAR--BUT NOW MINE EYE SEES  YOU.
 WHEREFORE I ABHOR MYSELF-- AND
REPENT IN DUST AND ASHES.
920 DATA MATTHEW 5/3,BLESSED ARE
 THE POOR IN SPIRIT--FOR     THE
IRS IS THE KINGDOM OF HEA-   VEN
.
930 DATA II CORINTHIANS 11/14,AN
D NO  MARVEL--FOR SATAN HIMSELF
IS    TRANSFORMED INTO AN ANGEL
OF    LIGHT.
940 '****** RANDOM QUIZ ******
950 N=RND(106)
960 T=T+1
970 IF INT(N/2)=N/2 THEN N=N-1
980 FOR X=1TO N
990 READ A$
1000 NEXT X
1010 READ B$
1020 SC=RND(6)
1030 IF SC=1THEN CLS0
1040 IF SC=2THEN CLS2
1050 IF SC=3THEN CLS3
1060 IF SC=4THEN CLS4
1070 IF SC=5THEN CLS6
1080 IF SC=6THEN CLS8
1090 IF SC=5THEN CLS6:IF SC=6THE
N CLS8
1100 SOUND 167,5
1110 GOSUB 1500
1120 PRINT@32," WHAT SCRIPTURE S
TATES:  "B$
1130 IF G$="ORDER"THEN 1150
1140 RESTORE
1150 GOSUB 1710
1160 INPUT R$
1170 IF R$=A$THEN1320
1180 PRINT@320,"  wrong! THE COR
RECT SCRIPTURE    IS: ";A$
1190 SOUND 70,5:FOR D=1TO1000:NE
XT
1200 IF T=QN THEN FOR D=1TO3000:
NEXT:GOTO 2370
1210 PRINT@416,"   PRESS enter F
OR ANOTHER              BIBLE SC
RIPTURE      ";
1220 INPUT D$
1230 IF G$="ORDER"THEN NEXT N:GO
TO 1920
1240 GOTO 950
1250 C=C+1
1260 Y=RND(9)-1:CLS(Y)
1270 IF Y=5THEN1260
1280 IF T=QN THEN FOR D=1TO400:N
EXT:GOTO 2370
1290 IF G$="ORDER"THEN 1920
1300 IF G$="RANDOM"THEN 950
1310 FOR D=1TO500:NEXT
1320 CLS0:FOR D=1TO200:NEXT:CLS5
:FOR D=1TO15:NEXT:CLS0:FOR D=1TO
200:NEXT
1330 CLS(RND(9))-1
1340 SOUND140,1:SOUND165,1:SOUND
180,1:SOUND200,1:SOUND213,1:SOUN
D221,4
1350 XS=RND(143)
1360 IF XS<129 THEN 1350
1370 SZ=RND(7)*16
1380 FOR H=192TO286STEP2:PRINT@H
,CHR$(XS+XZ);:NEXT
1390 RD=RND(143)
```

continued on 15

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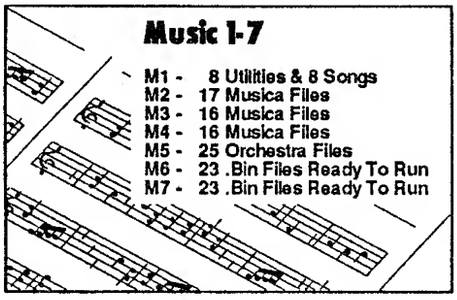
Music 1-7



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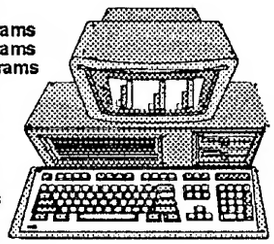
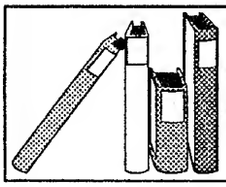
GRAPHICS 1-4

GR1 - 12 Basic Graphic Programs
GR2 - 12 Basic Graphic Programs
GR3 - 9 Coco 3 Graphic Programs
GR4 - 22 Coco Max Pictures
GR5 - 22 Coco Max Pictures
GR6 - 22 Coco Max Pictures
GR7 - 15 Coco Max Pictures
GR8 - 22 .Bin Pictures
GR9 - 22 .Bin Pictures
GR10 - 14 Large .Bin Pictures
GR11 - 8 Mge Pictures
GR12 - Coco Max 3 Pictures
GR13 - Macpaint Graphic Editor
GR14 - 5 Macintosh Pictures





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E4 - 5 Graphics Programs About Australia

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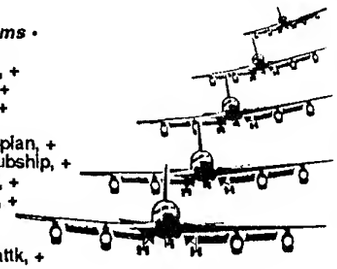
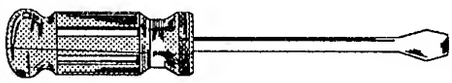
GA5 - Blackjack, Laser, Raceway, Utoplan, +
GA6 - Kings, Navyguns, Poolgame, Subship, +
GA7 - Connect4, F-16, Life, Mazeland, +
GA8 - Chute, Football, Othello, Slither, +
GA9 - Civilwar, Flight, Prix, Stock, +
GA10 - Cave, Fly, Pedro, Scramble, +
GA11 - Bunkers, Craps, Gunner, Nukeattk, +





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U5 - Assemblr, Mcbase, Squeezw, Writer, +
U6 - Chr-Ed3, Hgrcolor, Minidos, Updnlist, +
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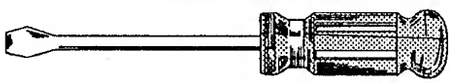
U8 - Fig Forth Language With Tutiorial



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M3	GR3	E3	U3	GA3
M4	GR4	E4	U4	GA4
M5	GR5		U5	GA5
M6	GR6	H1	U6	GA6
M7	GR7	H2	U7	GA7
	GR8	H3	U8	GA8
A1	GR9	H4		GA9
A2	GR10			GA10
	GR11			GA11
T1	GR12			
T2	GR13			
T3	GR14			

PLEASE CIRCLE

TAPE DISK

continued from 13

```
1400 IF RD<128THEN1390
1410 XD=RND(7)*16
1420 FOR H=193TO287STEP2:PRINT@H
,CHR$(RD+XD);:NEXT
1430 FOR D=1TO300:NEXT:PRINT@235
," CORRECT! ";
1440 SOUND200,5:FOR D=1TO200:NEX
T
1450 FOR D=1TO600:NEXT
1460 GOTO 1250
1470 SOUND176,3:FOR D=1TO150:NEX
T
1480 SOUND193,4:SOUND147,7
1490 FOR D=1TO500:NEXT:RETURN
1500 X=RND(18)
1510 IF X=1THEN FOR H=0TO31:PRIN
T@H,CHR$(130+16);:NEXT
1520 IF X=2THEN FOR H=0TO31:PRIN
T@H,CHR$(130+32);:NEXT
1530 IF X=3THEN FOR H=0TO31:PRIN
T@H,CHR$(131+32);:NEXT
1540 IF X=4THEN FOR H=0TO31:PRIN
T@H,CHR$(131+64);:NEXT
1550 IF X=5THEN FOR H=0TO31:PRIN
T@H,CHR$(132+80);:NEXT
1560 IF X=6THEN FOR H=0TO31:PRIN
T@H,CHR$(133+80);:NEXT
1570 IF X=7THEN FOR H=0TO31:PRIN
T@H,CHR$(133+64);:NEXT
1580 IF X=8THEN FOR H=0TO31:PRIN
T@H,CHR$(134+16);:NEXT
1590 IF X=9THEN FOR H=0TO31:PRIN
T@H,CHR$(135+32);:NEXT
1600 IF X=10THEN FOR H=0TO31:PRI
NT@H,CHR$(136+16);:NEXT
1610 IF X=11THEN FOR H=0TO31:PRI
NT@H,CHR$(139+16);:NEXT
1620 IF X=12THEN FOR H=0TO31:PRI
NT@H,CHR$(140+16);:NEXT
1630 IF X=13THEN FOR H=0TO31:PRI
NT@H,CHR$(140+64);:NEXT
1640 IF X=14THEN FOR H=0TO31:PRI
NT@H, CHR$(140+80);:NEXT
1650 IF X=15THEN FOR H=0TO31:PRI
NT@H,CHR$(131+16);:NEXT
1660 IF X=16THEN FOR H=0TO31:PRI
NT@H,CHR$(131+80);:NEXT
1670 IF X=17THEN FOR H=0TO31:PRI
NT@H,CHR$(131+96);:NEXT
1680 IF X=18THEN FOR H=0TO31:PRI
NT@H,CHR$(137+80);:NEXT
1690 IF IO$="IN ORDER"THEN 1120
1700 RETURN
1710 FOR H=0TO31:IF X=1THEN PRIN
T CHR$(136+16);:NEXT
1720 FOR H=0TO31:IF X=2THEN PRIN
T CHR$(136+32);:NEXT
1730 FOR H=0TO31:IF X=3THEN PRIN
T CHR$(140+32);:NEXT
1740 FOR H=0TO31:IF X=4THEN PRIN
T CHR$(140+64);:NEXT
1750 FOR H=0TO31:IF X=5THEN PRIN
T CHR$(129+80);:NEXT
1760 FOR H=0TO31:IF X=6THEN PRIN
T CHR$(133+80);:NEXT
1770 FOR H=0TO31:IF X=7THEN PRIN
T CHR$(133+64);:NEXT
1780 FOR H=0TO31:IF X=8THEN PRIN
T CHR$(134+16);:NEXT
1790 FOR H=0TO31:IF X=9THEN PRIN
T CHR$(141+32);:NEXT
1800 FOR H=0TO31:IF X=10THEN PRI
NT CHR$(130+16);:NEXT
1810 FOR H=0TO31:IF X=11THEN PRI
NT CHR$(142+16);:NEXT
1820 FOR H=0TO31:IF X=12THEN PRI
NT CHR$(131+16);:NEXT
1830 FOR H=0TO31:IF X=13THEN PRI
NT CHR$(131+64);:NEXT
1840 FOR H=0TO31:IF X=14THEN PRI
NT CHR$(131+80);:NEXT
1850 FOR H=0TO31:IF X=15THEN PRI
NT CHR$(140+16);:NEXT
1860 FOR H=0TO31:IF X=16THEN PRI
NT CHR$(140+80);:NEXT
1870 FOR H=0TO31:IF X=17THEN PRI
NT CHR$(140+96);:NEXT
1880 FOR H=0TO31:IF X=18THEN PRI
NT CHR$(137+80);:NEXT
1890 IF IO$="IN ORDER"THEN 1160
1900 IF IO$<>"IN ORDER"THEN RETU
RN
1910 '***** ORDER QUIZ *****
1920 FOR N=1TO53
1930 T=T+1
1940 IF T>QN THEN RESTORE: GOTO
2950
1950 READ A$
1960 READ B$
1970 GOTO 1020
1980 CLS(RND(9))-1
1990 X=RND(3)
2000 IF X=1THEN2030
2010 IF X=2THEN2070
2020 IF X=3THEN2110
2030 Z=RND(7)*16
2040 FOR H=96TO127:PRINT@H,CHR$(
131+Z);:NEXT:FOR H=352TO383:PRIN
T@H,CHR$(131+Z);:NEXT
2050 FOR H=128TO159:PRINT@H,CHR$
(140+Z);:NEXT:FOR H=384TO415:PRI
NT@H,CHR$(140+Z);:NEXT
2060 GOTO 2140
2070 B=RND(7)*16
2080 FOR H=96TO127:PRINT@H,CHR$(
140+B);:NEXT:FOR H=352TO383:PRIN
T@H,CHR$(140+B);:NEXT
2090 FOR H=128TO159:PRINT@H,CHR$
(131+B);:NEXT:FOR H=384TO415:PRI
NT@H,CHR$(131+B);:NEXT
2100 GOTO 2140
2110 RB=RND(7)*16
2120 FOR H=96TO127:PRINT@H,CHR$(
138+RB);:NEXT:FOR H=352TO383:PRI
NT@H,CHR$(138+RB);:NEXT
2130 FOR H=128TO159:PRINT@H,CHR$
(133+RB);:NEXT:FOR H=384TO415:PR
INT@H,CHR$(133+RB);:NEXT
2140 PRINT@192,"   WOULD YOU LIK
E TO REVIEW          SOME MORE S
CRIPTURES?      ";
2150 SOUND 170,6
2160 PRINT@288,"   TYPE yes OR n
o:    ";
2170 INPUT I$
2180 T=0:C=0
2190 IF I$="YES"THEN RESTORE:GOT
O 240
2200 IF I$="NO"THEN2300
2210 IF I$<>"YES" OR I$<>"NO"THE
N GOSUB 2230
2220 GOTO 2160
2230 OX=RND(7)*16
2240 FOR H=311TO319:PRINT@H,CHR$
(143+OX);:NEXT
2250 SOUND33,6:GOTO 2160
2260 IF L=3THEN SOUND 25,5:FOR H
=288TO319:PRINT@H, CHR$(143+32);
:NEXT
2270 IF L=4THEN SOUND 30,6:FOR H
=288TO319:PRINT@H,CHR$(143+64);:
NEXT
2280 IF L=5THEN SOUND 40,6:FOR H
=288TO319:PRINT@H,CHR$(143+80);:
NEXT
2290 RETURN
2300 SOUND 40,4:CLS2:FOR D=1TO20
:NEXT:CLS0:FOR D=1TO400:NEXT
2310 EP=EP+1:IF EP=5THEN 2330
2320 GOTO 2300
2330 CLS0:FOR D=1TO600:NEXT
2340 PRINT@236,"the";:PRINT@239,
CHR$(128);:PRINT@240,"end";
2350 FOR D=1TO5000:NEXT:CLS0:FOR
 D=1TO5000:NEXT
2360 END
2370 X=RND(9)-1:IF X=2 OR X=5 TH
EN 2370
2380 '****** SCORING ******
2390 CLS(X)
2400 Y=RND(7)*16:FOR H=64TO95:PR
INT@H,CHR$(140+Y);:NEXT:FOR H=16
0TO191:PRINT@H,CHR$(131+Y);:NEXT
2410 PRINT@96,"   YOUR SCORE IS"
 C "OUT OF" T "     ";
2420 PRINT@128,"          CORRECT
ANSWERS          ";
2430 SOUND170,2:SOUND189,2:SOUND
200,5
2440 FOR D=1TO1000:NEXT
2450 Z=RND(7)*16:FOR H=288TO319:
PRINT@H,CHR$(140+Z);:NEXT:FOR H=
352TO383:PRINT@H,CHR$(131+Z);:NE
XT
2460 GOTO 2950
2470 FOR D=1TO10000:NEXT
2480 FOR S=1TO3:CLS(RND(8)):FOR
D=1TO15:NEXT:CLS0:FOR D=1TO15:NE
XT:SOUND 237,1:FOR D=1TO300:NEXT
:NEXT S
2490 T=0:C=0
2500 X=RND(9)-1
2510 IF X=5THEN2500
2520 Y=RND(7)*16
2530 CLS(X):FOR H=0TO30STEP2:PRI
NT@H,CHR$(134+Y);:NEXT:FOR H=1TO
31STEP2:PRINT@H,CHR$(137+Y);:NEX
T
2540 FOR H=160TO190STEP2:PRINT@H
,CHR$(134+Y);:NEXT:FOR H=161TO19
1STEP2:PRINT@H,CHR$(137+Y);:NEXT
2550 PRINT@32,"YOUR NAME, PLEASE
";:SOUND108,2:SOUND140,2:SOUND15
9,2:SOUND185,2
2560 SOUND159,2:SOUND140,2:SOUND
108,4
2570 INPUT NM$
2580 PRINT@96,"HOW MANY QUESTION
S WOULD YOU    LIKE, "NM$;
2590 SOUND125,2:SOUND153,2:SOUND
170,2:SOUND193,2:SOUND170,2:SOUN
D153,2:SOUND125,4
2600 INPUT QN:IF QN=>1 AND QN<54
 THEN 2630
2610 IF QN<1 OR QN>53 THEN PRINT
@192,"NO MORE THAN 53,"NM$"!";
2620 SOUND 25,5:Y=RND(7)*16:FOR
H=134TO159:PRINT@H,CHR$(143+Y);:
NEXT:GOTO 2580
2630 SOUND133,2:SOUND159,2:SOUND
176,2:SOUND165,2:SOUND176,2:SOUN
D193,2:SOUND197,4
2640 RZ=RND(7)*16
2650 NS=RND(143)
```

continued on 16

continued from 15

```
2660 IF NS<128THEN2650
2670 FOR H=192TO223:PRINT@H,CHR$
(NS+RZ);:NEXT
2680 PRINT@288," CHECK YOUR ANSW
ERS FOR CORRECT      SPELLING BEF
ORE YOU ENTER        THEM, ";NM$"
."
2690 FOR D=1TO600:NEXT
2700 '***** OPENING INST. *****
2710 SOUND218,1:SOUND210,1:SOUND
197,1:SOUND193,1:SOUND176,1:SOUN
D159,1:SOUND133,4
2720 FOR D=1TO1000:NEXT
2730 FOR S=1TO4:SOUND170,2:SOUND
189,1:SOUND200,1:NEXT S
2740 FOR D=1TO50:NEXT:SOUND200,5
2750 PRINT@448,"    PRESS ANY KEY
 TO CONTINUE!    ";
2760 A$=INKEY$:IF A$=""THEN 2760
2770 NR=NR+1:IF NR>2THEN 2940
2780 X=RND(9)-1
2790 IF X=2 OR X=5 THEN 2780
2800 CLS(X)
2810 PRINT@64,"TYPE YOUR SCRIPTU
RES LIKE THIS: ";:SOUND225,6
2820 FOR D=1TO1000:NEXT
2830 PRINT@160,"   EXAMPLE:  II
TIMOTHY 3/15     ";
2840 FOR D=1TO1500:NEXT:SOUND200
,5
2850 PRINT@238," OR ";
2860 PRINT@288,"    EXAMPLE:  LU
KE 9/12-24       ";
2870 FOR D=1TO1500:NEXT
2880 Z=RND(7)*16
2890 FOR D=1TO1000:NEXT
2900 SOUND170,5:FOR D=1TO50:NEXT
:SOUND153,5
2910 FOR D=1TO50:NEXT:SOUND125,2
:SOUND153,2:SOUND170,2:SOUND207,
2:SOUND193,4
2920 PRINT@416,"    PRESS ANY KEY
 TO CONTINUE!    ";
2930 K$=INKEY$:IF K$=""THEN2930
2940 RETURN
2950 PRINT@320,"        YOUR GRAD
E IS";INT(C/T*100)"%       ";
2960 SOUND99,4:SOUND133,4:SOUND1
53,4:SOUND170,8
2970 FOR D=1TO2000:NEXT
2980 IF INT(C/T*100)=<79 THEN 30
00
2990 IF INT(C/T*100)>79 THEN 314
0
3000 X=RND(9)-1
3010 IF X=2 OR X=5THEN3000
3020 CLS(X)
3030 PRINT@128," TRY TO IMPROVE,
 "NM$"!   ";
3040 SOUND32,6:SOUND108,3:SOUND7
8,6
3050 FOR D=1TO2000:NEXT
3060 SOUND125,2:SOUND147,2:SOUND
165,2:SOUND180,2:SOUND193,5
3070 FOR D=1TO300:NEXT
3080 SOUND108,2:SOUND140,2:SOUND
159,2:SOUND176,2:SOUND185,5
3090 FOR D=1TO300:NEXT:PRINT@320
,"    PRACTICE MAKES PERFECT!
  ";
3100 SOUND176,4:SOUND159,4:SOUND
210,4:SOUND200,4:SOUND204,8
3110 FOR D=1TO600:NEXT
3120 CLS0:FOR D=1TO300:NEXT:CLS2
:FOR D=1TO15:NEXT:CLS0:FOR D=1TO
200:NEXT
3130 GOTO 1980
3140 CLS(RND(9))-1
3150 PRINT@224,"        VERY GOO
D WORK!!        ";
3160 FOR H=224TO255:PRINT@H,CHR$
(128);:NEXT
3170 SOUND237,1
3180 AM=AM+1:IF AM=7THEN 3200
3190 GOTO 3140
3200 PRINT@224,"        VERY GOO
D WORK!!        ";
3210 AM=0
3220 FOR D=1TO1000:NEXT
3230 CLS0:FOR X=1TO25
3240 F=INT(RND(0)*8)+1
3250 IF F=2 OR F=5 THEN 3240
3260 SET(RND(64)-1,RND(30)+1,F)
3270 FOR D=1TO100:NEXT:NEXT X
3280 FOR D=1TO500:NEXT
3290 FOR H=0TO63:FOR V=0TO31
3300 SET(5,10,5):SET(54,8,2):SET
(8,27,5):SET(52,25,2)
3310 RESET (5,10):RESET(54,8):RE
SET(8,27):RESET(52,25)
3320 AE=AE+1:IF AE=60THEN 3340
3330 GOTO 3300
3340 FOR D=1TO800:NEXT
3350 FOR H=0TO63:FOR V=0TO31
3360 SET(31,15,5):FOR D=1TO100:N
EXT
3370 SET(27,15,5):SET(35,15,5):S
ET(31,12,5):SET(31,18,5)
3380 SET(23,15,5):SET(39,15,5):S
ET(31,9,5)
3390 SET(31,21,5):SET(19,15,5):S
ET(43,15,5)
3400 SET(27,12,5):SET(35,12,5):S
ET(27,18,5):SET(35,18,5)
3410 SET(31,6,2):SET(31,24,2):SE
T(15,15,2):SET(47,15,2)
3420 FOR D=1TO150:NEXT
3430 SET(23,12,2):SET(39,12,2):S
ET(23,18,2):SET(39,18,2)
3440 SET(31,3,2):SET(31,27,2):SE
T(7,15,2):SET(11,15,2)
3450 SET(51,15,2):SET(55,15,2)
3460 SET(27,9,2):SET(35,9,2):SET
(27,21,2):SET(35,21,2)
3470 SET(15,10,6):SET(55,12,7):S
ET(13,26,1):SET(49,25,8)
3480 RESET(15,10):RESET(55,12):R
ESET(13,26):RESET(39,25)
3490 PJ=PJ+1:IF PJ=8THEN3510
3500 CLS0:GOTO3350
3510 AE=0:PJ=0
3520 FOR D=1TO1000:NEXT
3530 FOR S=1TO15:CLS0:FOR D=1TO2
0:NEXT:CLS(RND(9))-1:FOR D=1TO15
:NEXT:NEXT S
3540 SOUND 200,5:GOTO 1980
```

CoCo Clipboard Magazine

continued from 10

```
1810 GOSUB1460:A=0
1820 RETURN
1830 '
1840 '**** END OF PROGRAM ****
1850 '
1860 CLS:PRINT"ARE YOU SURE (Y/N
)?"
1870 A$=INKEY$:IF A$=""THEN1870
1880 IF A$="N"OR A$="n" THEN 460
1890 IF A$="Y"OR A$="y"THEN 1910
1900 GOTO1870
1910 UNLOAD0:CLS:END
1920 PCLEAR1:RUN80
```

CoCo Clipboard Magazine

Print Formatter

Carl England

System Requirements: 64K Disk, Disk EDTASM

With PRINT FORMATTER you can select several options to customize your text files. Among those options are right justification, various column widths and automatic page numbering. All together there are six printer options available from the main menu that will allow you to customize any text file. But the real power of PRINT FORMATTER comes from its ability to process commands contained within text files. These include four of the options from the main menu. Plus there are also commands that allow you to center your text and add printer control codes.

Entering the Listing

Due to the size of this program, it will be necessary to ues EDTASMOV to assemble it. This is the OVerlay version of Disk EDTASM that will free up more RAM for program storage and symbol tables. Because EDTASMOV only loads parts of the assembler as needed, it will be necessary th have the Disk EDTASM disk in drive 0 while entering and assembling PRINT FORMATTER.

When the entire program is entered, assemble it to disk using the Wait on Errors switch:

```
A PRINTFMT /WE
```

If no errors are encountered, save the source file:

```
W PRINTFMT
```

Using PRINT FORMATTER

```
LOADM"PRINTFMT":EXEC
```

You will be presented with a menu screen with the following options:

```
> BAUD RATE        2400
  RIGHT JUSTIFY    YES
  NUMBER PAGES     YES
  PAGE WIDTH     005  075
  PAGE LENGTH    005  060  066
  CONTINUOUS
  PRINT FILE
```

Just to the left of BAUD RATE is the menu cursor (>). Move the cursor to each option with the arrow keys.

To select your printer baud rate, press the left or right arrow key until the correct rate is displayed. Supported baud rates are 300, 600, 1200, 2400, 4800 and 9600.

RIGHT JUSTIFICATION, when active, will add extra spaces as needed so that you get a straight right margin. Gives a document a professional look. Select with the left or right arrow.

NUMBER PAGES: When active, will automatically number all pages of the text file starting with page 001. Select with left or right arrow.

PAGE LENGTH: The first number is the left margin, the second is the right margin.

PAGE LENGTH: The first number is the top of the page (usually set to 001 if you are using single sheet paper). The second number is the last line that text is to be printed on. The third number is the total length of the paper, usually 066.

Select the number you wish to change with the arrow keys and then enter the new number. 255 is the maximum that can be entered into each field. If you make a mistake, exit and return to the field and reenter the number. The number 000 should be avoided as PRINT FORMATTER will usually (but not always) interpret it as 255.

CONTINUOUS/SINGLE-SHEET: Use the left or right arrow key to toggle between CONTINUOUS (fan fold) or SINGLE-SHEET paper. If continuous is selected the paper will automatically advance to the next page; if single-sheet is selected, you will be prompted to insert another sheet of paper at the end of each page.

PRINT FILE: Insert the disk containing the file to be printed in drive 0 and press ENTER. You will be presented with a two column disk directory. Select a file to be

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printed by moving the cursor (black rectangle) with the arrow keys and press ENTER. If the file you want to print is not on this disk, press BREAK and you will be returned to the main menu. ***NOTE*** If more than 32 files are contained on this disk, pressing SHIFT UP or SHIFT DOWN will change directory "pages". Once the file is loaded into RAM it will be printed; then you will be returned to the main menu.

To give this program compatibility with all Color Computers (64K minimum), I chose to use the RAM between addresses $2000 and $F800 for buffer space. This will allow any file up to 54K (24 granules) to be printed using this program. Longer files should be saved as two or more separate files. If the 54K boundary is exceeded, then any text beyond that point will be ignored.

Using Imbedded Commands

When creating a text file (or modifying an existing one), you can add several commands that will affect the way PRINT FORMATTER will process the text. Each command must immediately follow a carriage return (ENTER) to be processed. ANY space or period that is the first character on a line will be processed as a command.

Commands:

SPACE: If right justification is off, then an extra space is added to the beginning of a line. If right justification is active then a new paragraph will be started and indented two spaces.

.C;text: The .C; command will center any
.c;text: text that follows the semicolon until a carriage return is encountered. If the text cannot be centered between the left and right margins, the command will be ignored.

.D27;BE: This is the data command. To use
.d0E it, enter one or more two digit hex characters to be sent to the printer. Separate each code with a semicolon. This will allow you to use ANY printer control code regardless of what type printer you are using. For example, if I want to switch my printer to double width, I would use ".D1B;0E". To send a

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line feed to my printer I would use ".d0A". (Because each each data byte takes up a byte in the printer buffer, this may affect line lengths and centering.)

.P: This is the PAGE command. If using
.p single-sheet paper, you .p will be prompted to insert another sheet. Otherwise, the paper will automatically advance. This command allows you to start another page before the current page is full.

.F: This is the FILL or RIGHT JUSTIFY
.f command. When FILL is .f active all lines will be the same length. Words may be taken from the next line or spaces may be added to create an even right margin.

.NF: This is the NO FILL command. It is
.nf useful when you want the .nf text to be printed exactly as entered.

.N: The NUMBER command will turn on page
.n12 numbering. If it is.n12 followed by a number then page numbering will start at that number. If no number is specified then page numbering will start at 001.

.S: SKIP command. If FILL is inactive,
.s12 then printer will skip .s12 specified number of lines. If FILL is active, then the print buffer will be output and printer will advance specified number of lines minus 1. If a number is not specified, then the number equals 1.

.W5;75: WIDTH command. Sets left and
.w10 right margins. Either or both
.W;60 .w10 may be specified. Right margin must be preceded by a semi colon. Left margin must be greater than 0 and right margin must be greater than left.

.L5;60;66 LENGTH command. Sets top,
.12 bottom and total length of
.L;55 page. .12 Any or all may be
.l;;70 specified. Bottom must be preceded by .L;55 a semicolon; total must be preceeded by two semicolons. .l;;70 Top must be greater than zero. Bottom must be greater than .L;62;68 top. Total must be equal to or greater than bottom.

Program Documentation:

Lines 110 thru 690 Print the main menu.

Lines 700 thru 760 Perform the same function as the BASIC CLS.

Lines 770 thru 810 Print to the current device any text pointed to by U register. Terminates when an ASCII 0 is encountered.

Lines 820 thru 1030 Print a 3 digit number to the current device. If the device is the screen, then register X points to the screen location.

Lines 1040 thru 2690 This is the routine that gets your input from the main menu.

Lines 2700 thru 4070 Display the directory and allows you to select a file. (Nice general purpose routine used in several of my programs.)

Lines 4280 thru 4520 The program starts here. Initialize all variables and calls all routines.

Lines 4530 thru 4970 Load the file into RAM addresses $2000 thru $F7FF. Banks between ROM and RAM.

Lines 4980 thru 5920 File is tested for imbedded commands. If right justification is active, lines are compressed and expanded to exactly fill the print buffer.

Lines 5930 thru 6530 Print the page number (if active). Print text buffer.Test for bottom of page.

Lines 6540 thru 6600 SPACE COMMAND. If fill is active, new line is started--indent two spaces.

Lines 6610 thru 7050 CENTER COMMAND. Centers text following semi- colon.

Lines 7060 thru 7500 DATA COMMAND. Converts two-character hex codes to single byte ASCII characters.

Lines 7510 thru 7830 PAGE COMMAND. Starts new page.

Lines 7840 thru 7880 FILL COMMAND. Activates right justification.

Lines 7890 thru 8000 & 8010 thru 8090 NUMBER COMMAND. If no value is specified, then page number equals 001 else page number equals value.

Lines 7890 thru 7960 & 8010 thru 8030 NO FILL COMMAND. Deactivates right justification.

Lines 8100 thru 8330 Evaluate a number. (Numbers greater than 255 give unpredictable results.)

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Lines 8340 thru 8370 Tests to see if print buffer is empty. If it isn't then it is printed.

Lines 8380 thru 8520 SKIP COMMAND. Skips n lines. If n not specified then n=1. If FILL is active then new line is started and n=n-1.

Lines 8380 thru 8860 WIDTH COMMAND. Selects left and right margins.

Lines 8870 thru 9200 LENGTH COMMAND. Selects top and bottom of page and total page length.

Line 9210 End of command chain. Each command tests to determine if it is the command being called. If it is not, then it passes control on to the next command in the chain. If control is passed to this line, then the command is invalid and will be ignored. Because commands are chained, additional commands could be added added at this point without changing any other part of the program.

Lines 9220 thru 9420 &
9520 thru 9590 &
9720 thru 9830 &
9960 thru 9900 &
10020 thru 10050 &
10800 thru 10830 Data to be printed on the text screen at various times

Lines 9430 thru 9510 Initial default values for PRINT FORMATTER:

BAUD	0= 300	FILL	0=YES
	1= 600		255=NO
	2=1200	NUMBER	0=NO
	3=2400		1=YES
	4=4800	SHEET	0=CONTINUOUS
	5=9600		255=SINGLE-SHEET

Lines 9600 thru 9650 Delay values for baud rate.

Lines 9660 thru 9710 &
9840 thru 9950 &
10650 thru 10140 &
10790 System variables and pointers.

Lines 10160 thru 10780 Random table used to determine where spaces should be inserted when FILL is active. (I used BASIC to generate the values for this table.)

Line 10840 Just there to let me know how long the program is when it is assembled._

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```
00100            ORG   $E00
00110 M          JSR   CLH
00120            LDU   #MENU
00130            JSR   PRINT
00140 M1         LDA   BAUD
00150            LDX   #BTAB1
00160            LDB   A,X
00170            STB   150
00180            LDX   #BTAB2
00190            LSLA
00200            LDU   A,X
00210            LDX   #$4F4
00220            STX   $88
00230            BSR   PRINT
00240            LDA   FILL
00250            BEQ   FILYES
00260            LDU   #NOTXT
00270            BRA   JPRNT
00280 FILYES     LDU   #YESTXT
00290 JPRNT      LDX   #$514
00300            STX   $88
00310            BSR   PRINT
00320            LDA   NUMBER
00330            BEQ   NUMNO
00340            LDU   #YESTXT
00350            BRA   NPRNT
00360 NUMNO      LDU   #NOTXT
00370 NPRNT      LDX   #$534
00380            STX   $88
00390            BSR   PRINT
00400            LDU   #LEFT
00410            LDA   ,U+
00420            LDX   #$54F
00430            BSR   NUMOUT
00440            LDA   ,U+
00450            LDX   #$554
00460            BSR   NUMOUT
00470            LDA   ,U+
00480            LDX   #$56F
00490            BSR   NUMOUT
00500            LDA   ,U+
00510            LDX   #$574
00520            BSR   NUMOUT
00530            LDA   ,U+
00540            LDX   #$579
00550            BSR   NUMOUT
00560            LDA   ,U+
00570            BEQ   CONT
00580            LDU   #SINGLE
00590            BRA   SHTPRT
00600 CONT       LDU   #CONTUS
00610 SHTPRT     LDX   #$582
00620            STX   $88
00630            BSR   PRINT
00640            LDB   RIGHT
00650            SUBB  LEFT
00660            CLRA
00670            ADDD  #PRNTBF
00680            STD   PBEND
00690            RTS
00700 CLH        LDX   #$400
00710            STX   $88
00720            LDA   #96
00730 CLH1       STA   ,X+
00740            CMPX  #$600
00750            BNE   CLH1
00760            RTS
00770 PRINT      LDA   ,U+
00780            BEQ   PRINT1
00790            JSR   [$A002]
00800            BRA   PRINT
00810 PRINT1     RTS
00820 NUMOUT     CLRB
00830            STX   $88
00840 NM1        INCB
00850            SUBA  #100
00860            BCC   NM1
00870            ADDA  #100
00880            BSR   DIGIT
00890            CLRB
00900 NM2        INCB
00910            SUBA  #10
00920            BPL   NM2
00930            ADDA  #10
00940            BSR   DIGIT
00950            CLRB
00960 NM3        INCB
00970            DECA
00980            BPL   NM3
00990 DIGIT      ADDB  #47
01000            PSHS  A
01010            TFR   B,A
01020            JSR   [$A002]
01030            PULS  A,PC
01040 SE         JSR   M1
01050            LDA   CURSOR
01060            LDB   #32
01070            MUL
01080            ADDD  #$4E0
01090            TFR   D,X
01100            LDA   #96
01110            STA   -32,X
01120            STA   32,X
01130            LDA   #126
01140            STA   ,X
01150            LDX   #PTAB
01160            LDB   CURSOR
01170            LSLB
01180            ABX
01190            JMP   ,X]
01200 BA         JSR   [$A000]
01210            CMPA  #10
01220            LBEQ  CURDWN
01230            CMPA  #8
01240            BNE   BA1
01250            DEC   BAUD
01260            BPL   SE
01270            LDA   #5
01280            BRA   BA2
01290 BA1        CMPA  #9
01300            BNE   BA
01310            LDA   BAUD
01320            INCA
01330            CMPA  #6
01340            BNE   BA2
01350            CLRA
01360 BA2        STA   BAUD
01370            BRA   SE
01380 JU         JSR   [$A000]
01390            CMPA  #94
01400            LBEQ  CURUP
01410            CMPA  #10
01420            LBEQ  CURDWN
01430            CMPA  #8
01440            BLT   JU
01450            CMPA  #9
01460            BGT   JU
01470            COM   FILL
01480            BRA   SE
01490 NP         JSR   [$A000]
01500            CMPA  #94
01510            LBEQ  CURUP
01520            CMPA  #10
01530            LBEQ  CURDWN
01540            CMPA  #8
01550            BLT   NP
01560            CMPA  #9
01570            BGT   NP
01580            LDA   NUMBER
01590            BEQ   NX1
01600            DECA
01610            BRA   NX2
01620 NX1        INCA
01630 NX2        STA   NUMBER
01640            JMP   SE
01650 PW         JSR   [$A000]
01660            CMPA  #94
01670            LBEQ  CURUP
01680            CMPA  #10
01690            LBEQ  CURDWN
01700            CMPA  #9
01710            BNE   PW
01720 PLF        LDU   #LEFT
01730            LDX   #$54E
01740            BSR   NS
01750            LDU   #RIGHT
01760            LDX   #$553
01770            BSR   NS
01780            BRA   PLF
01790 PL         JSR   [$A000]
01800            CMPA  #94
01810            LBEQ  CURUP
01820            CMPA  #10
01830            LBEQ  CURDWN
01840            CMPA  #9
01850            BNE   PL
01860 PTP        LDU   #TOP
01870            LDX   #$56E
01880            BSR   NS
01890            CMPA  #8
01900            BEQ   PTT
01910 PTB        LDU   #BOTTOM
01920            LDX   #$573
01930            BSR   NS
01940            CMPA  #8
01950            BEQ   PTP
01960 PTT        LDU   #TOTAL
01970            LDX   #$578
01980            BSR   NS
01990            CMPA  #8
02000            BEQ   PTB
02010            BRA   PTP
02020 NS         CLR   NFLAG
02030            COM   NFLAG
02040 NS0        PSHS  X
02050 NS1        LDA   #126
02060            STA   ,X+
02070 NS2        JSR   [$A000]
02080            CMPA  #8
02090            BEQ   NSRET
02100            CMPA  #9
02110            BEQ   NSRET
02120            CMPA  #94
02130            BNE   NS3
02140            PULS  X,U
02150            BRA   CURUP
02160 NS3        CMPA  #10
02170            BNE   NS4
02180            PULS  X,U
02190            BRA   CURDWN
02200 NS4        CMPA  #48
02210            BLT   NS2
02220            CMPA  #57
02230            BGT   NS2
02240            LDB   NFLAG
02250            BEQ   NS5
02260            CLR   NFLAG
02270            CLR   ,U
02280 NS5        LDB   ,U
02290            SUBA  #48
02300            STA   ,U
02310            LDA   #10
02320            MUL
02330            ADDB  ,U
02340            TFR   B,A
02350            STB   ,U
02360            JSR   NUMOUT
02370            PULS  X
02380            BRA   NS0
02390 NSRET      PULS  X
02400            LDB   #96
02410            STB   ,X
02420            RTS
02430 SS         JSR   [$A000]
02440            CMPA  #94
02450            BEQ   CURUP
02460            CMPA  #10
02470            BEQ   CURDWN
02480            CMPA  #8
02490            BLT   SS
02500            CMPA  #9
02510            BGT   SS
02520            COM   SHEET
02530            JMP   SE
02540 CURUP      DEC   CURSOR
02550            BRA   ERASE
02560 CURDWN     INC   CURSOR
02570 ERASE      LDA   #96
02580            STA   $54E
02590            STA   $553
02600            STA   $56E
02610            STA   $573
02620            STA   $578
02630            JMP   SE
02640 FN         JSR   [$A000]
02650            CMPA  #94
02660            BEQ   CURUP
02670            CMPA  #13
02680            BNE   FN
02690            RTS
02700 DIR        LDD   #$1103
02710            LDU   #DIRBUF
02720 DIR1       JSR   DSKIN
02730 DIR2       LDA   ,X+
02740            BEQ   DIR4
02750            CMPA  #255
02760            BEQ   DIR6
02770            LDB   #16
02780 DIR3       STA   ,U+
02790            LDA   ,X+
02800            DECB
02810            BNE   DIR3
02820            BRA   DIR5
02830 DIR4       LEAX  16,X
02840 DIR5       LEAX  15,X
02850            CMPX  #$4FF
02860            BLT   DIR2
02870            LDD   2,Y
02880            INCB
02890            CMPB  #19
02900            BNE   DIR1
02910 DIR6       STU   DIREND
02920            CLR   PAGE
02930 DIR7       LDU   #DIRBUF
02940            CMPU  DIREND
02950            BNE   DIR9
02960            JSR   CLH
02970            LDU   #DIRMT
02980            CLRA
02990            JSR   PRINT
03000 DIR8       JSR   [$A000]
03010            CMPA  #3
03020            BNE   DIR8
03030            PULS  D
03040            JMP   START
03050 DIR9       LDB   PAGE
03060 DIR10      DECB
03070            BMI   DIR11
03080            LEAU  $200,U
03090            BRA   DIR10
03100 DIR11      STU   PAGEAD
03110            JSR   CLH
03120 DIR12      LDX   $88
03130            LEAX  1,X
03140            STX   $88
03150            BSR   DIR14
03160            LDD   $88
03170            CMPD  #$5F0
03180            BGE   DIR16
03190            LDD   #$2003
03200 DIR13      JSR   [$A002]
03210            DECB
03220            BNE   DIR13
03230            LEAU  5,U
03240            CMPU  DIREND
03250            BLT   DIR12
03260            BRA   DIR16
03270 DIR14      LDB   #8
03280            BSR   DIR15
03290            LDA   #46
03300            JSR   [$A002]
03310            LDB   #3
03320 DIR15      LDA   ,U+
03330            JSR   [$A002]
03340            DECB
03350            BNE   DIR15
03360            RTS
03370 DIR16      LDU   #$400
03380            LDX   PAGEAD
03390 MENUX      LDA   #126
03400            STA   ,U
03410 MENU1      JSR   [$A000]
03420            BEQ   MENU1
03430            CMPA  #94
03440            BEQ   MENU2
03450            CMPA  #10
03460            BEQ   MENU3
03470            CMPA  #8
03480            BEQ   MENU4
03490            CMPA  #9
03500            BEQ   MENU5
03510            CMPA  #95
03520            BEQ   MENU7
03530            CMPA  #91
03540            BEQ   MENU8
03550            CMPA  #3
03560            BNE   MENU11
03570            PULS  D
03580            JMP   START
03590 MENU11     CMPA  #13
03600            BNE   MENUX
03610            RTS
03620 MENU2      BSR   MENU6
03630            CMPU  #$410
03640            BLE   MENUX
03650            LEAU  -32,U
03660            LEAX  -32,X
03670            BRA   MENUX
03680 MENU3      BSR   MENU6
03690            CMPU  #$5E0
03700            BGE   MENUX
03710            TFR   X,D
03720            ADDD  #32
03730            CMPD  DIREND
03740            BGE   MENUX
03750            LEAU  32,U
03760            TFR   D,X
03770            BRA   MENUX
03780 MENU4      BSR   MENU6
03790            CMPU  #$400
03800            BEQ   MENUX
03810            LEAU  -16,U
03820            LEAX  -16,X
03830            BRA   MENUX
03840 MENU5      BSR   MENU6
03850            CMPU  #$5F0
03860            BEQ   MENUX
03870            TFR   X,D
03880            ADDD  #16
03890            CMPD  DIREND
03900            BGE   MENUX
03910            LEAU  16,U
03920            TFR   D,X
03930            JMP   MENUX
03940 MENU6      LDB   #96
03950            STB   ,U
03960            RTS
03970 MENU7      LDA   PAGE
03980            LBEQ  MENU1
03990            DECA
04000            STA   PAGE
04010            JMP   DIR7
04020 MENU8      LDD   PAGEAD
04030            ADDD  #$200
04040            CMPD  DIREND
04050            LBGT  MENU1
04060            INC   PAGE
04070            JMP   DIR7
04080 DSKIN      PSHS  D
04090            LDA   #2
04100            LDB   SDRIVE
04110 DISKIO     LDY   $C006
04120            STD   ,Y
04130            PULS  D
04140            STD   2,Y
04150            LDX   #$400
04160            STX   4,Y
04170            JSR   [$C004]
04180            PSHS  X,U
04190            LDA   6,Y
04200            BEQ   DISK4
04210            LDU   #ERMSG
04220            LDA   #13
04230            JSR   [$A002]
04240            JSR   PRINT
04250 DISK3      JSR   [$A000]
04260            BEQ   DISK3
04270 DISK4      PULS  X,U,PC
04280 START      LDS   #$1FF0
04290            CLR   $FFDE
04300            CLR   LINECT
04310            LDA   NUMBER
04320            BEQ   STN0
04330            CLRA
04340            INCA
04350            STA   NUMBER
04360 STN0       JSR   M
04370            JSR   SE
04380            JSR   DIR
04390            LDA   13,X
04400            STA   GRAN
04410            LDD   14,X
04420            STD   LAST
04430            LDD   #$2000
04440            STD   MABUFF
04450            LDD   #$1102
04460            BSR   DSKIN
04470            LDU   #GATBUF
04480            LDB   #128
04490 GAT        LDA   ,X+
04500            STA   ,U+
04510            DECB
04520            BNE   GAT
04530 MAIN       LDA   GRAN
04540            LDB   #1
04550            LSRA
04560            BCC   MAIN1
04570            LDB   #10
04580 MAIN1      CMPA  #17
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Back Issue Info.

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Sept./Oct. 1987

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Pascal Programming
The Assembly Line
On Line With CompuServe
CoCo 'n Amateur Radio
Is A Hard Disk In Your Future?
CoCo-ixing Your Business

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Issue 2
Nov./Dec. 1987

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The 9th Power
The Dream Machine
Pascal Programming
On Line With CompuServe
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- FKeys III
- BIGPIX
- Font Bonanza
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- 300 Peeks 'n Pokes
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CoCo 'N Amateur Radio
BASIC Help
Thorns In BASIC09
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- Colorventure FastDupe 512k
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- Basic Freedom by Dr. Preble
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BASIC Programming Contest
CoCo Club Corner
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Into To Midi
Invoice Program
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CoCo 'N Amateur Radio
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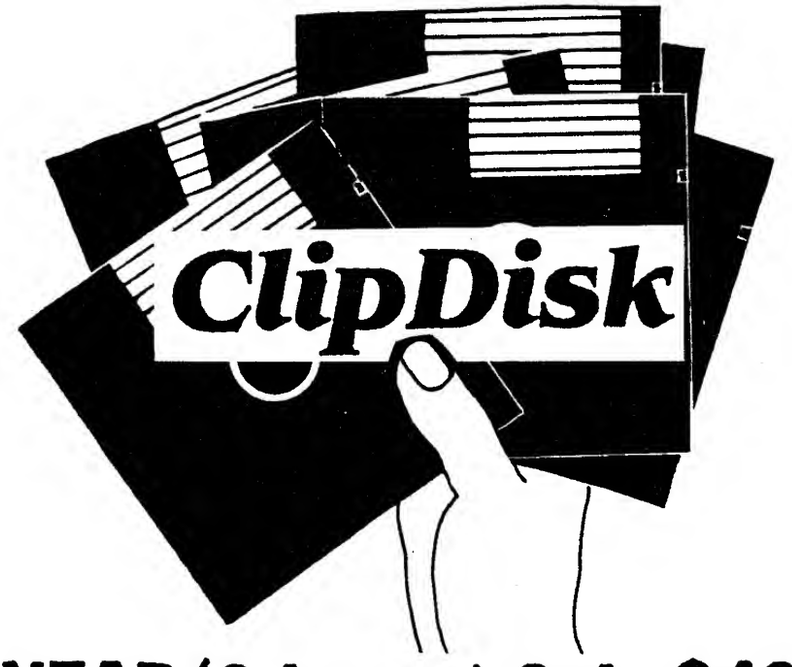

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04590          BLT   MAIN2
04600          INCA
04610 MAIN2    LDU   MABUFF
04620 MAIN3    JSR   DSKIN
04630          CLRB
04640          ORCC  #$50
04650          CLR   $FFDF
04660 MAIN4    LDA   ,X+
04670          STA   ,U+
04680          DECB
04690          BNE   MAIN4
04700          CLR   $FFDE
04710          ANDCC #$AF
04720          LDD   2,Y
04730          INCB
04740          CMPB  #10
04750          BEQ   MAIN5
04760          CMPB  #19
04770          BNE   MAIN3
04780 MAIN5    LDB   GRAN
04790          LDX   #GATBUF
04800          LDA   B,X
04810          BMI   MAIN6
04820          STA   GRAN
04830          LDD   MABUFF
04840          ADDD  #$900
04850          STD   MABUFF
04860          CMPD  #$F800
04870          BHS   FMT
04880          BRA   MAIN
04890 MAIN6    SUBA  #$C0
04900          STA   GRAN
04910          LDD   MABUFF
04920 MAIN7    DEC   GRAN
04930          BEQ   MAIN8
04940          ADDD  #256
04950          BRA   MAIN7
04960 MAIN8    ADDD  LAST
04970          STD   MABUFF
04980 FMT      JSR   CLH
04990          JSR   PRNTX3
05000          ORCC  #$50
05010          CLR   $FF40
05020          LDX   #$2000
05030          LDB   ,X
05040          CMPB  #32
05050          BEQ   FMT0
05060          CMPB  #46
05070          BNE   FMT1
05080 FMT0     JSR   CMD
05090          CLR   $FFDF
05100 FMT1     LDA   ,X+
05110          CMPA  #13
05120          BNE   FMT2
05130          LDB   ,X
05140          CMPB  #32
05150          BEQ   FMT0
05160          CMPB  #46
05170          BEQ   FMT0
05180 FMT110   LDB   FILL
05190          BEQ   FMT101
05200          JSR   PRNT
05210          BRA   FMT1
05220 FMT101   LDA   #32
05230 FMT2     CMPA  #32
05240          BNE   FMT3
05250          CMPU  #PRNTBF
05260          BEQ   FMT1
05270          LDB   FILL
05280          BNE   FMT3
05290          LDB   -1,U
05300          CMPB  #32
05310          BEQ   FMT1
05320 FMT3     STA   ,U+
05330          CMPX  MABUFF
05340          BLO   FMT4
05350          JSR   PRNT
05360          JMP   START
05370 FMT4     CMPU  PBEND
05380          BNE   FMT1
05390          CMPA  #32
05400          BEQ   FMT701
05410          LDA   ,X
05420          CMPA  #32
05430          BNE   FMT6
05440          LEAX  1,X
05450          BSR   PRNT
05460          BRA   FMT1
05470 FMT6     STU   TEMP
05480          LDY   #PRNTBF+2
05490 FMT7     LDA   ,Y+
05500          CMPA  #32
05510          BEQ   FMT701
05520          CMPY  TEMP
05530          BNE   FMT7
05540          BSR   PRNT
05550          BRA   FMT1
05560 FMT701   LDB   #32
05570          LDU   PBEND
05580 FMT702   LDA   ,-U
05590          STB   1,U
05600          CMPA  #32
05610          BEQ   FMT703
05620          LEAX  -1,X
05630          BRA   FMT702
05640 FMT703   LDA   FILL
05650          BEQ   FMT801
05660          BSR   PRNT
05670          JMP   FMT1
05680 FMT801   LDU   #PRNTBF
05690          LDY   #RNDTBL
05700 FMT9     INC   RNDPTR
05710          LDB   RNDPTR
05720          ANDB  #127
05730          LDB   B,Y
05740          CMPB  PBEND+1
05750          BGE   FMT9
05760          LDA   B,U
05770          CMPA  #32
05780          BNE   FMT9
05790          CLRA
05800          ADDD  #PRNTBF
05810          LDU   PBEND
05820          STD   TEMP
05830 FMT10    LDA   ,-U
05840          STA   1,U
05850          CMPU  TEMP
05860          BNE   FMT10
05870          LDU   PBEND
05880          LDA   -1,U
05890          CMPA  #32
05900          BEQ   FMT801
05910          BSR   PRNT
05920          JMP   FMT1
05930 PRNT     LDA   #254
05940          STA   $6F
05950          CLR   $FFDE
05960          LDA   LINECT
05970          BNE   PRNT03
05980          LDB   TOP
05990          STB   LINECT
06000          LDA   #13
06010 PRNT00   DECB
06020          BEQ   PRNT01
06030          JSR   [$A002]
06040          BRA   PRNT00
06050 PRNT01   LDA   NUMBER
06060          BEQ   PRNT03
06070          LDB   RIGHT
06080          SUBB  #5
06090          LDA   #32
06100 PRNT02   JSR   [$A002]
06110          DECB
06120          BNE   PRNT02
06130          LDA   NUMBER
06140          JSR   NUMOUT
06150          LDA   #13
06160          JSR   [$A002]
06170          JSR   [$A002]
06180          INC   LINECT
06190          INC   LINECT
06200          INC   NUMBER
06210 PRNT03   BSR   PRNTX
06220          LDB   LINECT
06230          CMPB  BOTTOM
06240          BLE   PRNT3
06250          JSR   CMD300
06260 PRNT3    CLR   $6F
06270          RTS
06280 PRNTX    LDA   #254
06290          STA   $6F
06300          STA   $FFDE
06310          LDU   PBEND
06320 PRNTXX   LDA   ,-U
06330          CMPA  #32
06340          BEQ   PRNTXX
06350          STA   ,U+
06360          LDA   #13
06370          STA   ,U+
06380          CLR   ,U
06390          LDA   #32
06400          LDB   LEFT
06410 PRNTX1   DECB
06420          BEQ   PRNTX2
06430          JSR   [$A002]
06440          BRA   PRNTX1
06450 PRNTX2   LDU   #PRNTBF
06460          JSR   PRINT
06470          INC   LINECT
06480 PRNTX3   LDA   #32
06490          LDU   PBEND
06500 PRNTX4   STA   ,-U
06510          CMPU  #PRNTBF
06520          BGT   PRNTX4
06530          RTS
06540 CMD      CMPB  #32
06550          BNE   CMD1
06560          JSR   BUFOUT
06570 CMD01    LDA   #32
06580          STA   ,U+
06590          STA   ,U+
06600          RTS
06610 CMD1     LDA   ,X+
06620          LDA   ,X+
06630          ORA   #32
06640          SUBA  #32
06650          CMPA  #67
06660          BNE   CMD2
06670 CMD10    LDA   ,X+
06680          CMPA  #13
06690          BNE   CMD100
06700          LEAX  -1,X
06710          RTS
06720 CMD100   CMPA  #59
06730          BNE   CMD10
06740          JSR   BUFOUT
06750 CMD11    PSHS  X
06760          CLRB
06770 CMD12    LDA   ,X+
06780          CMPA  #13
06790          BEQ   CMD13
06800          STA   ,U+
06810          INCB
06820          CMPX  MABUFF
06830          BEQ   CMD13
06840          CMPU  PBEND
06850          BNE   CMD12
06860          PULS  X
06870          RTS
06880 CMD13    LDA   RIGHT
06890          SUBA  LEFT
06900          STB   TEMP
06910          SUBA  TEMP
06920          LSRA
06930          PULS  U
06940 CMD14    LDU   PBEND
06950 CMD15    LDB   ,-U
06960          STB   1,U
06970          CMPU  #PRNTBF
06980          BNE   CMD15
06990          LDB   #32
07000          STB   ,U
07010          DECA
07020          BNE   CMD14
07030          LEAX  -1,X
07040          LDU   #PBEND
07050          JMP   PRNT
07060 CMD2     CMPA  #68
07070          BNE   CMD3
07080 CMD20    LDA   ,X+
07090          CMPA  #13
07100          BNE   CMD21
07110          RTS
07120 CMD21    BSR   CMD26
07130          BEQ   CMD20
07140          LDB   #16
07150          MUL
07160          STB   TEMP
07170 CMD22    LDA   ,X+
07180          CMPA  #13
07190          BNE   CMD23
07200          RTS
07210 CMD23    BSR   CMD26
07220          BEQ   CMD22
07230          ADDA  TEMP
07240          STA   ,U+
07250          CMPU  PBEND
07260          BNE   CMD24
07270          JSR   PRNT
07280 CMD24    LDA   ,X+
07290          CMPA  #13
07300          BNE   CMD25
07310          LEAX  -1,X
07320          RTS
07330 CMD25    CMPA  #59
07340          BNE   CMD24
07350          BRA   CMD20
07360 CMD26    LDB   #1
07370          CMPA  #48
07380          BLT   CMD29
07390          CMPA  #57
07400          BGT   CMD27
07410          SUBA  #48
07420          BRA   CMD28
07430 CMD27    CMPA  #65
07440          BLT   CMD29
07450          CMPA  #70
07460          BGT   CMD29
07470          SUBA  #55
07480 CMD28    INCB
07490 CMD29    DECB
07500          RTS
07510 CMD3     CMPA  #80
07520          BNE   CMD4
07530          LEAX  1,X
07540 CMD30    CMPU  #PRNTBF
07550          BEQ   CMD300
07560          JSR   PRNTX
07570 CMD300   LDA   SHEET
07580          BEQ   CMD302
07590          CLR   $6F
07600          LDY   #$5E0
07610          STY   $88
07620          LDU   #INSRT
07630          JSR   PRINT
07640 CMD301   JSR   [$A000]
07650          BEQ   CMD301
07660          STY   $88
07670          JSR   PRINT
07680          LDU   #PRNTBF
07690          BRA   CMD32
07700 CMD302   LDB   LINECT
07710          LDA   #254
07720          STA   $6F
07730          LDA   #13
07740 CMD31    JSR   [$A002]
07750          INCB
07760          CMPB  TOTAL
07770          BLT   CMD31
07780          JSR   [$A002]
07790 CMD32    CLR   LINECT
07800          CLR   $6F
07810 CMD33    CLR   $FFDF
07820          LEAX  -1,X
07830          RTS
07840 CMD4     CMPA  #70
07850          BNE   CMD5
07860          JSR   BUFOUT
07870          CLR   FILL
07880          RTS
07890 CMD5     CMPA  #78
07900          BNE   CMD6
07910          CLR   TEMP
07920          LDA   ,X+
07930          CMPA  #70
07940          BEQ   CMD51
07950          CMPA  #102
07960          BEQ   CMD51
07970 CMD50    CMPA  #13
07980          BNE   CMD52
07990          LEAX  -1,X
08000          BRA   CMD53
08010 CMD51    LDA   #255
08020          STA   FILL
08030          JMP   BUFOUT
08040 CMD52    BSR   EVAL
08050 CMD53    LDA   TEMP
08060          BNE   CMD54
08070          INCA
08080 CMD54    STA   NUMBER
08090          RTS
08100 EVAL     CLR   TEMP
08110          BRA   EVAL1
08120 EVALO    LDA   ,X+
08130 EVAL1    CMPA  #13
08140          BEQ   EVALX
08150          CMPA  #59
08160          BEQ   EVALX
08170          CMPA  #48
08180          BLT   EVALO
08190          CMPA  #57
08200          BGT   EVALO
08210          SUBA  #48
08220          PSHS  A
08230          LDA   TEMP
08240          LDB   #10
08250          MUL
08260          STB   TEMP
08270          PULS  A
08280          ADDA  TEMP
08290          STA   TEMP
08300          BRA   EVALO
08310 EVALX    LEAX  -1,X
08320          LDA   TEMP
08330          RTS
08340 BUFOUT   CMPU  #PRNTBF
08350          BNE   BFX
08360          RTS
08370 BFX      JMP   PRNT
08380 CMD6     CMPA  #83
08390          BNE   CMD8
08400          BSR   BUFOUT
08410          LDA   ,X+
08420          CLR   TEMP
08430          CMPA  #13
08440          BNE   CMD61
08450          LEAX  -1,X
08460          RTS
08470 CMD61    BSR   EVAL
08480          BRA   CMD64
08490 CMD63    JSR   PRNT
08500 CMD64    DEC   TEMP
08510          BNE   CMD63
08520          RTS
08530 CMD8     CMPA  #87
08540          BNE   CMD9
08550          BSR   BUFOUT
08560 CMD80    LDA   ,X+
08570          CMPA  #13
08580          BEQ   CMD8Y
08590          CMPA  #59
08600          BEQ   CMD810
08610          BSR   EVAL
08620          BEQ   CMD81
08630          CMPA  #127
08640          BGE   CMD81
08650          STA   LEFT
08660 CMD81    LDA   ,X+
08670          CMPA  #13
08680          BEQ   CMD82
08690 CMD810   LDA   ,X+
08700          JSR   EVAL
08710          BEQ   CMD8X
08720          BMI   CMD8X
08730          CMPA  LEFT
08740          BLE   CMD8X
08750          STA   RIGHT
08760          BRA   CMD83
08770 CMD82    LDA   RIGHT
08780          LEAX  -1,X
08790 CMD83    SUBA  LEFT
08800          TFR   A,B
08810          CLRA
08820          ADDD  #PRNTBF
08830          STD   PBEND
08840 CMD8X    RTS
08850 CMD8Y    LEAX  -1,X
08860          RTS
08870 CMD9     CMPA  #76
08880          BNE   CMDRTS
08890          LDA   LINECT
08900          BNE   CMD90
08910          JSR   CMD30
08920 CMD90    LDA   ,X+
08930          CMPA  #13
08940          BEQ   CMD9Y
08950          CMPA  #59
08960          BEQ   CMD910
08970          JSR   EVAL
08980          BEQ   CMD91
08990          STA   TOP
09000 CMD91    LDA   ,X+
09010          CMPA  #13
09020          BEQ   CMD9Y
09030 CMD910   LDA   ,X+
09040          CMPA  #59
09050          BEQ   CMD920
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09060           JSR     EVAL
09070           CMPA    TOP
09080           BLO     CMD92
09090           STA     BOTTOM
09100 CMD92     LDA     ,X+
09110           CMPA    #13
09120           BEQ     CMD9Y
09130 CMD920    LDA     ,X+
09140           JSR     EVAL
09150           CMPA    BOTTOM
09160           BLO     CMD9X
09170           STA     TOTAL
09180 CMD9X     RTS
09190 CMD9Y     LEAX    -1,X
09200           RTS
09210 CMDRTS    RTS
09220 MENU      FCC     /        PRINT FORMATTER/
09230           FDB     $D0D
09240           FCC     /      COPYRIGHT (C) 1989/
09250           FCB     13
09260           FCC     /              BY/
09270           FCB     13
09280           FCC     /        CARL ENGLAND/
09290           FDB     $D0D
09300           FCB     13
09310           FCC     /  BAUD RATE/
09320           FCB     13
09330           FCC     /  RIGHT JUSTIFY/
09340           FCB     13
09350           FCC     /  NUMBER PAGES/
09360           FCB     13
09370           FCC     /  PAGE WIDTH/
09380           FCB     13
09390           FCC     /  PAGE LENGTH/
09400           FDB     $D0D
09410           FCC     /  PRINT FILE/
09420           FCB     0
09430 BAUD      FCB     3
09440 FILL      FCB     0
09450 NUMBER    FCB     1
09460 LEFT      FCB     5
09470 RIGHT     FCB     75
09480 TOP       FCB     5
09490 BOTTOM    FCB     60
09500 TOTAL     FCB     66
09510 SHEET     FCB     0
09520 YESTXT    FCC     /YES/
09530           FCB     0
09540 NOTXT     FCC     /NO /
09550           FCB     0
09560 SINGLE    FCC     /SINGLE SHEET/
09570           FCB     0
09580 CONTUS    FCC     /CONTINUOUS  /
09590           FCB     0
09600 BTAB1     FCB     180
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09630           FCB     18
09640           FCB     6
09650           FCB     1
09660 BTAB2     FDB     B300
09670           FDB     B600
09680           FDB     B1200
09690           FDB     B2400
09700           FDB     B4800
09710           FDB     B9600
09720 B300      FCC     /300 /
09730           FCB     0
09740 B600      FCC     /600 /
09750           FCB     0
09760 B1200     FCC     /1200/
09770           FCB     0
09780 B2400     FCC     /2400/
09790           FCB     0
09800 B4800     FCC     /4800/
09810           FCB     0
09820 B9600     FCC     /9600/
09830           FCB     0
09840 CURSOR    FCB     0
09850 NFLAG     RMB     1
09860 PTAB      FDB     BA
09870           FDB     JU
09880           FDB     NP
09890           FDB     PW
09900           FDB     PL
09910           FDB     SS
09920           FDB     FN
09930 DIREND    RMB     2
09940 PAGEAD    RMB     2
09950 PAGE      RMB     1
09960 DIRMT     FCC     /SOURCE DISK EMPTY/
09970           FCB     13
09980           FCC     /PRESS BREAK TO CONTINUE/
09990           FDB     $D00
10000 DIRBUF    EQU     $2600
10010 SDRIVE    FCB     0
10020 ERMSG     FCC     /DISK INPUT ERROR/
10030           FCB     13
10040           FCC     /PRESS ANY KEY TO CONTINUE/
10050           FDB     $D00
10060 GRAN      RMB     1
10070 LAST      RMB     2
10080 MABUFF    RMB     2
10090 GATBUF    RMB     128
10100 PRNTBF    EQU     $500
10110 PBEND     FDB     $546
10120 TEMP      RMB     2
10130 TEMP1     RMB     2
10140 RNDPTR    FCB     0
10150 RNDTBL    FDB     $4029
10160           FDB     $1254
10170           FDB     $392B
10180           FDB     $4725
10190           FDB     $E69
10200           FDB     $6B0F
10210           FDB     $4C4E
10220           FDB     $737D
10230           FDB     $7A52
10240           FDB     $1551
10250           FDB     $4264
10260           FDB     $1D4B
10270           FDB     $45B
10280           FDB     $3210
10290           FDB     $6E59
10300           FDB     $3A77
10310           FDB     $7E05
10320           FDB     $5A2E
10330           FDB     $2D3C
10340           FDB     $4D63
10350           FDB     $5516
10360           FDB     $4103
10370           FDB     $6044
10380           FDB     $2221
10390           FDB     $714A
10400           FDB     $266A
10410           FDB     $572C
10420           FDB     $4358
10430           FDB     $1470
10440           FDB     $6524
10450           FDB     $747E
10460           FDB     $1823
10470           FDB     $375F
10480           FDB     $3634
10490           FDB     $2820
10500           FDB     $6D07
10510           FDB     $7C35
10520           FDB     $676
10530           FDB     $3E0C
10540           FDB     $5349
10550           FDB     $B2A
10560           FDB     $3178
10570           FDB     $133F
10580           FDB     $755C
10590           FDB     $968
10600           FDB     $2733
10610           FDB     $621E
10620           FDB     $27B
10630           FDB     $6111
10640           FDB     $1730
10650           FDB     $4F67
10660           FDB     $5645
10670           FDB     $872
10680           FDB     $1C48
10690           FDB     $460A
10700           FDB     $4D2F
10710           FDB     $6F5D
10720           FDB     $D19
10730           FDB     $1F6E
10740           FDB     $5038
10750           FDB     $793B
10760           FDB     $1B1A
10770           FDB     $6C66
10780           FDB     $5174
10790 LINECT    FCB     0
10800 INSRT     FCC     /INSERT ANOTHER PAGE/
10810           FCB     0
10820 INSRT1    FCC     /                   /
10830           FCB     0
10840 ZZZZ
10850           END     START
```
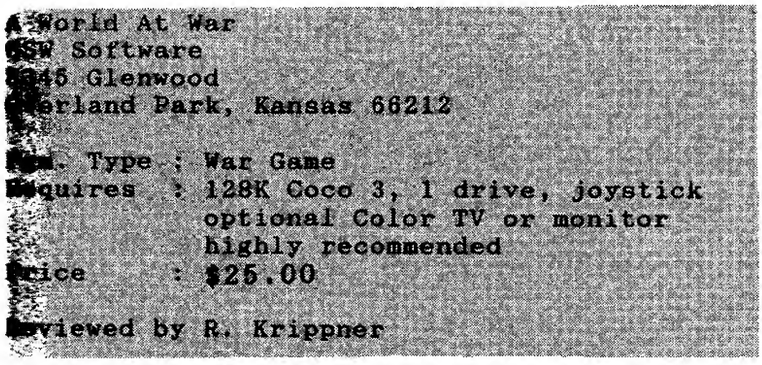

This program is available on *ClipDisk*. A single issue is just $9.95, a full year is only $49.95. Phone orders are accepted at (716) 679-0126 - please have your credit card ready. You may also order by mail by enclosing your check or money order to *CoCo Clipboard Magazine*. Our address is 3742 U.S. 20, Box 3, Fredonia, NY 14063 U.S.A. Slightly higher prices for overseas orders.

CoCo Clipboard Magazine

Product Reviews

Review Crew



A World At War
GSW Software
[illegible]45 Glenwood
[illegible]erland Park, Kansas 66212

[illegible]. Type : War Game
[illegible]quires : 128K Coco 3, 1 drive, joystick
optional Color TV or monitor
highly recommended
[illegible]rice : $25.00

[illegible]viewed by R. Krippner

I rate computer games using a scale I call the Backseat Driver Index. The more spectators who gather around the computer to watch and participate, the higher the rating. A World At War just hit a new high on the BDI. It's without a doubt the most sophisticated war game simulation for the Color Computer that we've ever received for review. As far as I know, World At War is unique in the Coco world.

War is a very sophisticated, very complex program. The documentation is a 31 page booklet, and you'll need to study that book very carefully before you can begin to appreciate just how interesting this program is. Also included is a quick reference sheet that contains a list of the various commands. Keep that reference sheet handy. You'll need it.

The basic idea behind War is to create two armies, Black and White, and pit them against each other. The computer can control both, one, or neither of the armies.

The two armies confront one another on a battlefield that is a 64 X 64 grid. Each space in the grid is of a specific type of terrain that can have a significant impact on the movement of the armies.

Each army consists of up to 60 individual units. Each unit has its own unique strength, firepower, movement abilities and other characteristics, and even its own attack strategy.

What makes War so sophisticated is the ability to reconfigure the armies, terrain, attack and movement tactics. By using the built in editing utilities, you can create wars ranging from primitive battles with bows, arrows and swords, to sophisticated interstellar battles with high energy lasers, nuclear weapons or planet busters.

Because of the complexity of the program, some organization is necessary before you begin. First you need to decide on the general rules and basic scenario for the war. Without rules, you could find yourself restricted to bows, spears, swords and knights in armor and find yourself up against an opponent with tanks, bombers and machine guns.

So before anything else, you and your opponent (if you are playing against another person) need to set rules based on the scenario you choose.

The next thing to do is decide on the type of terrain on which the battle is to be fought.

Here is where War begins to really show its strength. The battle field can be completely designed by the players to meet their needs. Each square in the 64 X 64 grid can be given it's own unique type of terrain, represented on the screen as an icons. Up to 200 different icons representing different basic types of terrain are available already, ranging from clear areas, rough areas, different types of roads, rivers, walls, water, forests, cities and mountains.

You can then set up the battle field by placing these icons on the grid to make lakes, rivers, oceans, islands, cities... whatever you wish. And if the icons provided do not fit your needs, you can edit the existing ones or create your own to provide your own types of terrain. As an example, some of the sample war scenarios included with the program took place in space, in a dungeon and in the Pacific Ocean.

War gives you even more flexibility when creating your army. As noted earlier, each army can consist of up to 60 individual units. Each unit has its own values for strength, firepower, when the unit will enter the battle, how easily the unit can move, how quickly it can recover strength after it has been attacked and a whole host of other factors, making each unit's capabilities and limitations extremely realistic.

The tactics each unit will use during battle can also be configured by the players. The units can be told when they should fire, what types of enemy units

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they should fire on and when to retaliate against an attack against them.

Movement tactics can also be set by the players, allowing units to move on their own according to a pre-set strategy rather than requiring the player to move each unit individually. Units can be instructed to move towards certain types of enemies, to remain stationary, to move towards cities or to move in a specific direction.

Each type of unit is represented by it's own unique icon which the players can create. Each unit is placed on the battle field by positioning its icon at the desired location.

As with the terrain editing options, the army editing options are extremely powerful. The sample war games included with the program included armies made up of medieval knights and archers, to star ships armed with lasers.

After the terrain has been set up and the armies created (or one of the several pre-defined scenarios has been loaded) it's time to go to war.

Here also there is a great deal of flexibility. One person can play against the computer, two people can play against each other, or you can have the computer control both armies and just sit back and watch.

During the battle, two different points of view are possible. There is a normal view, which gives you a close up view of a small section of the 64 X 64 "world" in which the battle is taking place, or the World view, which allows you to see the entire battle field at once. Directly controling the movement of various army units is only possible in the normal view, however, not when in the world view mode.

There are three phases during each round of play:

Observation: This is where you can view the battle field, and plan your strategy. You can observe both armies, check the strengths of the various units, etc. It is during this point that reinforcement units will be brought in, if they were created, and when units damaged during attacks recover strength, if possible.

It is also at this point where transportable units may be loaded or unloaded from transport units.

Fire Phase: This phase allows you to fire on the enemy. You can directly control this phase by selecting which unit you wish to fire, and then selecting the enemy unit you wish it to fire upon.

You can speed up this phase by allowing the computer to complete it for you. If you have the computer finish the fire phase, the computer will have your units fire at the enemy according to the fire tactics you set up when you created your army.

You can change a unit's fire tactics in the middle of the game if you wish.

Move Phase: It is during this part of the game where you move the units of your army. You just select the unit you wish to

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move with the arrow keys or joystick, and then move it to the new position. When a unit moves, the type of terrain it moves through effects how far the unit may move.

As with the fire phase, you can have the computer finish moving your remaining units for you. If you select this option, the computer will move any units that have not yet been moved according to the movement tactics you selected for those units when you set up your army.

Finally, you can save your game at any point and return to it later and pick up where you left off. This is an extremely important option since just setting up the terrain and the armies can take a considerable amount of time. Actual play can take many hours.

War is not an easy game to master. Setting up a new scenario from scratch takes a considerable amount of time. The author of the game provides many ways to help cut down on the amount of time it takes, such as ways to copy the values from one army unit to another so you don't have to retype the same information over and over again for all of your infantry units.

But in my opinion, the complexity is well worth it. This simulation is so flexible that it isn't just a game, it's almost a programming language dedicated to designing battle scenarios. If you're a war game buff, or if you're losing interest in mindless shoot-em-ups, A World At War is highly recommended.

One final note: A color tv or monitor is almost a necessity with this game because the various icons used to represent terrain and army units are all in living color, and are difficult to see on a monochrome screen. But here the game is flexible as well; you can change color palette to suit whatever type of display you are using.

C.E.B.B.S.
K.B. Enterprises
435 Brightwaters Drive
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(407) 799-3253

Pgm Type: CoCo 3 BBS System under RS-DOS
Requires: 128K CoCo 3, min. 1 drive
512K supported with up to 6 drives (2 RAM, 4 actual)
ADOS 3* Compatible
Price : $39.95

Reviewed by Bill Laurence

Ah! I see you just purchased that new Sooper Doozy 300 / 1200 / 2400 external modem for your CoCo! Congratulations! Ah! I also see that your long distance phone bill looks something like the national debt from calling all those faraway BBS's. Maybe it's time to start your own BBS and have people calling you!

Kevin Berner has put together a rather comprehensive BBS program that runs under regular RS-DOS on a 128K CoCo 3. The program is called CEBBS for CoCo Electronic BBS and it comes on a single disk with 45 pages of instructions. If there is any part of this product I had a problem with, it is the manual. The rest of the program and the BBS itself runs very nicely, but the manual is tough to read through because it needs to be reorganized, but let's not dwell on the negatives, let's emphasize the positives.

First: The program will actually run on a stock 128K CoCo with one drive. You will also need an RS-232 Pak (see the ads for Orion, Kenton or CRC in this issue of *Clipboard*) and an auto answer modem. If you have an upgraded Multi-Pak you can use that, or you can use a Y-Cable to handle the disk controller and the RS-232 Pak. Now you won't have much room, if any for message bases or a large upload or download sections with a single drive 128K system, but the program will permit you to get "on the air" at a minimum cost.

Second: The program will run under ADOS 3 with some slight and easy to follow modifications. Since ADOS3 permits 40 and 80 track drives to be used, you must make sure that certain CEBBS files like HEADERS.SYS, INDEX.SYS and MESSAGES.SYS all reside on the same drive. A careful reading of Art Flexer's manuals and Kevin's instructions will get you going. I did not have time to give a complete test using RGB-DOS on stock 35 track drives or using a hard drive.

Third: 512K support is there as well as RAM-Disk support. The only thing to remember about using ram disks with this, or any other program, is that a power failure can wipe out all sorts of important files. Be sure to either back up the ram drives faithfully or don't put anything on them you can't reload from floppies. Kevin makes several suggestions on what to put on your ram drives to speed up program execution. Naturally having a couple of ram drives and a couple of floppies will really allow you to have larger message bases and software sections and it will speed things up considerably, just be sure you know what files are where and how to protect yourself, your users and your files from power loss. Most RS-DOS ram disk programs are compatible with CEBBS.

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Fourth: Free form structured design. What? How can a program be free form and structured at the same time? Sounds like Lawrence Welk (ah one, ana two) trying to sit in with Paul Shaffer and the band on the Letterman show! Well Kevin has given you only a few real "must do's" in setting up the program. Certain files must reside on particular drives with other files. After that menu design, program flow and general operations are up to you. A cleaver user input routine lets you set permission levels for each caller, and even restricted areas can be set up for the main Sysop and any assistant sysops you may appoint. Ah, but here's the rub and it's the manuals only drawback. But..

Fifth: On line games are available. I'm not much of a game player whether on line or off, but there are those of you who enjoy this venue of computing. CEBBS will let you set up an on line game for your caller. Just make sure your game knows where and how to exit back to he main BBS. Kevins instructions will tell you just how this is done, including the right USR calls to make it happen quickly and smoothly.

If you really are that first time user I mentioned at the start of this review you are going to be confused by the organization of the manual. All the information you need is here, but it's not all in one place. An experienced BBS-er shouldn't have problems with this (especially if they've had to struggle through a lot of less friendly CoCo BBS's in the past) system, but a new user just might. In particular is the lack of printed examples of what and exactly how menus should be set up. We have all seen some pretty slick menu pages on other BBS's and we'd like to do just as nice of a job. But if your an artistic klutz like me, a few examples would have been welcome. In addition the manual seems to make contradictory statements of what files need to be on what disk(s). If there is any place in the manual that needs that "one ana two" approach to structure and clarity is the "where," and exactly the "how" the system files should be on the disk. For example a file called "INFO.SYS" can be copied on to any disk and "...may reside on different ones if necessary." Then three sentences later the manual says ".. Please note that the INFO.SYS file MUST be contained on the default drive." Confusing to say the least. But as I mentioned a little careful reading and experimentation with the program as a whole will get you through it. A quick call to Kevin will also help.

The program does support xmodem uploads and downloads. Frankly despite the development of many other protocols Xmodem still works well day in and day out. True, it can be slow but it works which is more than I can say for many other protocols which have so many variations that not every terminal programs versions will work with other versions.

Should you buy CEBBS? Good question! You've got to understand that a BBS is something that you must devote some time to every day. It may tie up your CoCo from other tasks, especially if you will be running a 24 hour BBS. You'll certainly need a second phone line for 24 hour operation. But the results and rewards can be terrific. A well run BBS attracts faithful and competent users like a good restaurant attracts loyal customers and good sports teams attract faithful season ticket buyers. Those callers will be the source of tons of useful information and programs. They will also become the long distance (or local) CoCo friends you've been looking for to share your thoughts, ideas and concerns. A poorly run BBS is just like that BBS you called the other night... remember with the lack of downloads, the one track message bases populated by brain dead messages etc.

CEBBS is a solid BBS program for RS-DOS users. It permits flexibility in structure and design and the price is reasonable for all that it does provide. Get through the manual and you're set to go on line. Drop us your new BBS number in the mail and we'll give your CEBBS board a call!

DynaStar

Frank Hogg Laboratory, Inc.
770 James Street
Syracuse, NY. 13203
(315)474-7856

Pgm. Type : word processor for OS9
Requires : 512K Coco 3, OS9 Level 2
Price : 149.95

Reviewed by Richard Simoes

DynaStar is actually two programs, DynaStar (DS) and DynaForm (DF), that together make up a word processor that works under OS9. To eliminate confusion, I'll use the program names DS and DF when I'm referring to the specific program and I'll use DynaStar when I'm referring to the word processor package.

This review will focus on the most recent release of DynaStar which requires OS9 Level II. An earlier version is contained on the disk for Level I users.

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DS is a text editor, but it also includes some formatting commands. These commands perform horizontal formatting such as text justification and line centering. DF handles only what would be considered vertical formatting. It keeps track of such things as page breaks, headers and footers, and top and bottom margins. It does not change the text in any way that you formatted with DS. DF just determines where the text will appear on the printed page. Both DS and DF support optional startup files. Whenever you invoke either program, each will look for its startup file, and if found, will read in the file.

DS requires at least an 80 column by 24 line window for the display. There is another startup file which DS reads from your /DD/SYS directory called TERMSET. TERMSET describes the characteristics of the video display. The only parameters worth changing for the Coco are the screen colors and whether or not DS is to use an overlay window. DS will also work with an external terminal connected to a port such as /T2. This is done by describing the external terminal in TERMSET and invoking DS with the optional terminal argument.

If you don't specify a file name when you start DS, you are presented with the 'files' menu. To edit, specify either an old or new file name. If the new file name specified already exists, then the 'old' file is opened for editing, otherwise a new file is created.

DS does not actually edit your original file, but instead edits a copy in the memory buffer and creates a scratch file on the disk called 'xxx.SCR'; where xxx is the name of the file you're editing. Since DS can edit files larger than the buffer size, DS writes out text to this scratch file as you read in more text. When you save what you are editing, the buffer and the remainder of the file being edited are written to the scratch file. Then the original file is deleted and the scratch file is renamed to the original file name. If you abandon editing a file instead, the scratch file is deleted and the buffer is cleared.

One undocumented requirement is that the file you are editing must always be in the current data directory or DS can't do proper file clean up when you're finished editing. You can change your data direc-

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PERTASCII $19.95
Level 2 OS9 scrambled-letter word game for 1-16 players. Play against the computer's 15,000 word dictionary or friends. 256K.

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tory within DS to prevent this. This change is local to DS and is recommended even though you do have access to the shell.

There are a few other capabilities that you can do from the 'files' menu such as toggle the help menu for the editor off or on, display the file names in the data directory, create or list keyboard macros (more on this later), and print the text currently in the buffer. Printing the text in the buffer causes DF to start. This capability is intended to be a quick way to print what's in the buffer to the printer. Ordinarily you would have DF process a saved file from the shell.

To start an editing session, you specify a file name at the 'files' menu as described above or on the command line when starting DS. Either method puts you in the edit window. At the top of the screen in the following order, is the status line, the help menu (if you haven't turned it off),and a ruler. The rest of the screen is the edit window. The status line contains the file name and the current editing modes. DS is in the insert mode, so just start entering text or switch to overwrite mode to type over existing text. Other text modes include auto word wrap and justification.

The horizontal formatting is done with the aid of the ruler. In the ruler you can set a right margin, a wrap margin, and tabs. The wrap margin allows you to left justify text indented from the left margin. When you execute the command, adjust paragraph, the current paragraph will be formatted right there on the screen, in a true what-you-see- is-what-you-get, according to the ruler settings and current justification mode.

Programmers will like the auto indent capability. What this does is begin the next line indented to the position of the first non-blank character in the line above. One note of caution. Don't use the adjust paragraph command or your code will be compressed into a nice neat paragraph.

All editing commands, including cursor movement, involves typing single or double control key (CTRL) sequences. At first this arrangement seemed odd to me, but I was surprised how quickly I was up to speed. The help menu and the keyboard layout I believe had a lot to do with this.

Cursor movement consists of a full complement of commands. In addition to single character movement, there is word ahead and back, go to the beginning or end of line, and screen scroll up or down a single line at a time through the file. Larger cursor movements include the ability to move to the top or bottom of the file or screen, to move forward or backward a page at a time, or go to the next paragraph. Deleting text can be done by character, by word, or by line, each done with several variations.

Block commands are fully supported. Once you mark the beginning and the end of a block of text, it may be copied, moved, killed (deleted), or written to a new file. A moved block is automatically unmarked after the move while a copied block requires you to unmark the block before editing can resume. When coping the same text several times this comes in handy.

There is a find text and a find and replace text command that operates only once. You must do the again command to repeat the action for each occurrence through out the file. To do a global find and replace for all occurrences, you must create a keyboard macro. DS gives you the capability to create macros with a total buffer space of 400 characters to work with. A macro can be made up of any DS commands and executes just like any other command. If you find yourself defining the same macros over and over again, DS will automatically define them for you if you put them in its startup file.

DF supports a number of formatting codes which are all represented by a 'dot' followed immediately by two characters. A summary of the commands can be accessed from the help menu. The formatting codes are embedded in your text file with DS and then will be processed by DF. DF outputs the final formatted file, which can be redirected to any output. DF also supports either single page or continuous page printing and you may specify the range of page numbers you want printed.

As I said earlier, DF handles primarily vertical formatting. With the formatting commands you can set the line spacing, the page length, and the size of the top, bottom and left margins. You can begin a new page anywhere and also assign a new page number. To prevent 'orphan' lines, a conditional page break will test for the available lines left on the current page against the number you specify. A single line header and footer can be defined and will be printed where you specify within the top and bottom margins. Separate odd and even page headers and footers may also be specified.

Macros can be defined which then become your own formatting commands. You can include any DF formatting commands and text within the macro except define new macros. Macros can be executed anywhere on the page, or at the bottom of every page, or anywhere based on if the page number is odd or even.

DF will do file insertion so you can break large files up into smaller ones

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such as chapters for a book. Then print the entire book by calling each chapter from one smaller file. File insertion can be nested to 3 levels if you wish.

If you 'tag' text in the file, it may be included in a table of contents or an index. There is a limit of 400 entries. The 'tagged' text is actually separate text you enter into the file preceded by a format code, not existing text. DF saves the 'tagged' text along with the current page number and prints them together when it encounters the proper format code. Sorting either by the page number or by the 'tagged' text, results in DF printing the table of contents or the index. An index with identically 'tagged' text on more than one page will each be printed on separate lines and not once with all the page numbers listed as is traditionally done.

DF supports mail-merge. Mail-merge allows you to write a form letter containing variables in place of such things as names and addresses. Variables can be substituted from both the keyboard or a file. Since DF doesn't do the horizontal formatting, it can not rejustify the line after text substitution. Therefore, non-justified text is recommended where substitutions occur.

Printer support is provided by making control characters equivalent to printer codes. First, define what codes are to be sent to the printer when each control character (your choice) is encountered by DF. Second, insert the control characters in the text file with DS. Whenever DF encounters a control character during formatting, it substitutes the printer codes for the control character. Once I defined the control characters, I found putting them in DF's startup file saved me the trouble doing it again.

I would rate DynaStar's documentation as good, missing excellent, solely because of some omissions. The 36 page manual is clearly written and includes both an index and a table of contents. There is also an application section to help you with startup files and keyboard macros. Missing from the manual is an explanation of some formatting codes and how to define printer codes. I found most of this information in 'read me' and example files on the disk. The missing format codes do appear in DS's help menu, however. If you can't find an answer to a question, I've found Frank Hogg to be a strong believer in user support. It was with his help that I found out that you must only edit files in the current data directory.

DynaStar should meet the needs of most users. I recommend DynaStar to anyone willing to put in a little time to learn this powerful word processor.

Big BASIC

Danosoft
P.O. Box 124, Station "A"
Mississauga, ONT L5A 2Z7
Canada (416) 897-0121

Pgm. Type: UTILITY, allows BASIC to use all memory.
Requires : CoCo-3, 128K or 512K, Disk drive.
Price : $39.95 + $2.50 shipping, U.S.

Review by: Jim DeStafeno

Big BASIC is a new type UTILITY for the CoCo. It is a enhancement to the limited Operating System of RS-BASIC. Time will tell, the importance of Big BASIC to the CoCo community may rank right along with TeleWriter, ADOS and RGB-DOS. (It is compatible with RGB-DOS and the latest issue of ADOS-3, but not ADOS Extended, nor Hyper I/O.)

Big BASIC runs from disk, on a CoCo 3 only. It allows the RS-BASIC programmer to use all of the 128K/512K of memory in the computer. This not only allows BIG RS-BASIC programs, up to 472K long, (and in the not too distance future, 1Mb), but large programs no longer need be "chained" from floppy, hard disk or ramdisk. The 32K maximum BASIC program size barrier is forever broken.

In a 512K machine, up to 58 programs (or program parts totaling max of 472K) can be in memory at the same time up. (In the 128K, up to 9 programs, 92K total.) Big BASIC divides the program memory area into 8K blocks. Any one "runable" program can up to a "group" of three of these blocks long, 24K max. It is a simple matter to move from one program block sets to any other program block set using two new Big BASIC commands, BLOCKnn and WINDOWn.

Since all the memory is made active, there is enough room to do all work in memory, which is the fastest method possible. Combine this with the instant moving from block to block, and it's easy to see the action of Big BASIC is as fast as under RS-BASIC. Quite a thing!

One of the things that makes Big BASIC so fast is the no delay during the block to block movement. The sub-programs are preloaded in memory block "groups", just sitting there ready to run. A "group", 1 to 3 blocks, can be 8K, 16K or 24K long. Therefore a GOTO to a given line number within a running "group"; is just as fast as normal RS-BASIC.

Looking at the technicals of Big BASIC, we find three new commands; WINDOWn, BLOCKnn and VSWITCH. In Big BASIC, "win-

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See Review November '89 issue!

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dow" refers to two different portions of memory totaling approximately 32K; total of four 8K blocks. Each partition normally contains two different programs.

One window may contain the control or menu program, while the other window may contain the object program. Unlike OS-9, only one of these windows can be active (awake) at a time. (Yes, there is a "sleep" state.)

The manual calls these windows Window1 and Window2. Window1 is generally used to run the menu program. The menu can be manually operated, INPUT, INKEY$, etc. or totally automatic, or a combination of the two. Normally Window2 is where the program, (or parts of a program, or many separate programs) is/are run.

Moving from one window to the other is as simple as using the "Windown" command. A neat point is, when a window is moved it just goes to "sleep". It stops executing, but all the pointers, etc. remain in place. Upon returning the program "awakens" and resumes running from where it stopped when the Window was left.

Upon startup there is no Window2 and Window1 has almost 29K. Window2 can be created with a size of either 8K, 16K or 24K of usable memory from Window1. There are four of these "window blocks", also approximately 8K each. They are distributed between the two Windows by the window sizing activity. If one of the four blocks is assign to Window1 then Window2 automatically gets the other three. If Window1 is assigned two, then Window2 gets the remaining two; etc.

The next thing to know is Big BASIC's special save. Big BASIC modifies the RS-BASIC operating system in such a way that BASIC programs can be saved with the SAVEM command. Such a save under Big BASIC allows the program to auto-start with all variables intact. The save(s) is/are made from Window1.

Big BASIC assigns each of these blocks a number and is accessed with the new BLOCKnn command. The "nn" represents a number, which can be between 48 and 55 in a 128K machine, 0 and 55 in 512K. Available Blocks depend on the type program to be run; which is explained in the manual.

BLOCKnn is also used to tell Window2 which normally unused portion of memory to make active. It too is simply done from Window1 with a BLOCKnn:WINDOW2 command line. The example will also make Window2 active. If the program in Window2 is in the "sleep" state because it had been exited from previously, it will become active and begin processing as soon as the Window2 is made. (Note, a program can be saved so that it will auto-start the first time it's Window is made active.)

That's all there is to it. Window1 normally contains a menu program that tells which part of memory to make active and run in Window2. As noted above, the moving back and forth between the windows is done with the Window command AND when a window is moved to, the program in the window resumes processing right where it stopped when the window was exited.

This resumption of the processing right after the exit point allows the menu program to run in a preordered manner, and thereby direct the action that occurs in Window2.

We should also discuss the three possible methods of variable manipulation, all centered around the new Big BASIC command, VSWITCH. When this command is executed, the variables and their values change windows. However, while Vswitch is invoked, only processing can be done; no Save, Block move, etc. This Vswitch command is worth it's weight in gold.

If the values from a database are preloaded in to the memory Blocks and the program in Window1 directs Window2 to a given memory Blocknn, and the Vswitch command is invoked, the values in the two windows switch. Therefore, the program in Window1 can work with the previously stored values from Window2.

True variable Chaining can be accomplished by working the action the other way. That is, the variables to be worked "on" are included with the menu program in Window1. Just after jumping to a new Block via Window2, which contains the "next" part of the execution program, Vswitch is executed which puts the variables and their values in Window2, which are worked with as the program runs.

When all is ready to move Window2 to the next Block part of the program, the variables along with their new values are put back in Window1 with Vswitch execution. After the move is done, a new program part is in Window2, and the program part begins running. The first thing done is a Vswitch, putting the variables and their values from the previous processing in the now active Window. The switching action is as fast as everything else; done in a wink of an eye.

At the request of one purchaser, the Big BASIC disk includes a subroutine that will move variables from window to window without using Vswitch. So, whatever flavor you want in this area, Big BASIC provides it.

My wish list for Big Basic is pretty short, just one item, but it's a big one. Like OS-9, Big Basic should have a second active process, something like a third

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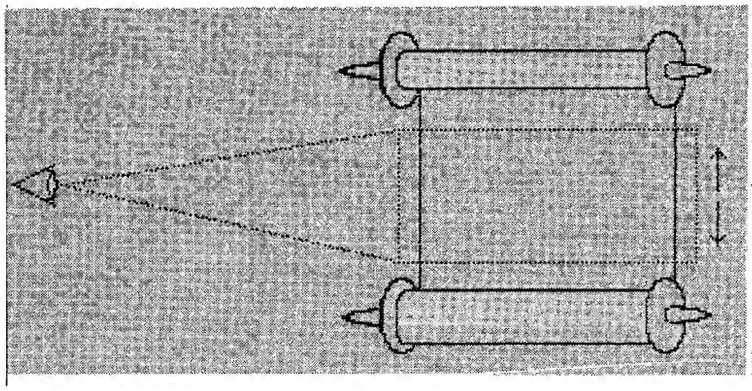
Glad You Asked . . .”

Robert Gault

For a Christmas present this year (1989), I received the first request letter sent to this column. Coco3 owner, Roger I. Carlson, of Tinley Park, IL asks how to scroll a width40 or PMODE4 image completely off the monitor, leaving a blank screen. Just to make it more of a challenge, the scrolling should be done from Basic.

There are two methods of scrolling a screen. To explain them, it will help to look at the figure. Scroll really is a noun not a verb but it is a convenient image for what we see on a movie, microfilm, or video screen.



The first method pulls the scroll past the viewing frame. This is easy with film. With a computer, we must move the viewing screen past video memory. This is possible with a Coco by sending data to the SAM ($FFC6 - $FFD3) or GIME ($FF9C - $FF9E) chips. Unfortunately, the SAM chip's resolution ,512 bytes, is much too coarse to be useful. The GIME chip resolution is much finer but there are still problems. The memory just past the W80 text screen is not easily accessable to Basic. It needs to be erased for a blank screen to be seen. A complex assembly program would be needed to do this job properly for W32 or W80 screens. The method does work well with PMODE screens. First, you must PCLEAR 8 graphic pages and PCLS pages 5-8. This is simple, but is a waste of memory.

The second method keeps video memory constant and imitates the above by rapidly redrawing the image; each time changing the vertical location. This is easily done for text screens by repeatedly sending PRINT. Basic is too slow to redraw a PMODE screen so an assembly program is needed. Happily this type of ml. program is simple but is still slow compared to the GIME method.

Try each of the programs below and compare the results. All methods are illustrated even if they are not very useful. The slight jerkiness of the GIME scroll is unavoidable in Basic. The GIME chip of course is only in the Coco 3. All Coco owners can use the ml. graphics routine. A simple graphic image for Coco 3 users to experiment with is the terrible trio seen with ALT CTRL RESET, however, the programs draw a pattern. Since the pattern is the same for all graphics programs, just type it once and MERGE it thereafter.

If there is enough reader demand (send letters to Ted Paul), I might be talked into presenting an assembly program which uses the GIME chip to scroll width40/80 text over a two page text screen.

DETAILS OF SAM CHIP

$FFD3	SET	32768	VDG OFFSET
$FFD2	CLEAR		
$FFD1	SET	16384	in bytes
$FFD0	CLEAR		
$FFCF	SET	8192	
$FFCE	CLEAR		
$FFCD	SET	4096	
$FFCC	CLEAR		
$FFCB	SET	2048	
$FFCA	CLEAR		
$FFC9	SET	1024	
$FFC8	CLEAR		
$FFC7	SET	512	
$FFC6	CLEAR		

DETAILS OF GIME CHIP

$FF9D	BIT 7	$40000	VDG OFFSET
	BIT 6	$20000	in bytes
	BIT 5	$10000	
	BIT 4	$8000	
	BIT 3	$4000	
	BIT 2	$2000	
	BIT 1	$1000	
	BIT 0	$800	
$FF9E	BIT 7	$400	
	BIT 6	$200	
	BIT 5	$100	

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```
       BIT 4          128
       BIT 3          64
       BIT 2          32
       BIT 1          16
       BIT 0          8

$FF9C  BIT 3          8          VDG SCROLL
       BIT 2          4        offset in lines
       BIT 1          2        used with text screen
       BIT 0          1        HRES letters=8 lines
```

```
10 'TO SCROLL TEXT SCREENS USING
   > PRINT <
20 'L=SCREEN LINES-1;  15 FOR W3
2; 24 FOR W40/80
30 L=24
40 FOR I=1TOL:PRINT:FORT=1TO50:N
EXTT,I
50 END
```

```
10 ' TO SCROLL HRES TEXT SCREENS
 WITH GIME CHIP
20 ' WORKS BEST AT W40 IF W80 WA
S CLSed
30 ' OV IS OFFSET VDG
40 ' W IS WIDTH OF HIGH RES TEXT
50 ' &HE7 INDICATES SELECTED SCR
EEN 0=32;1=40;2=80
60 ' &HFE04 = WIDTH OF H.RES TEX
T
70 ' H.RES TEXT STARTS AT &H6C00
0
80 ' &H6C000/8 = &HD800
90 IFPEEK(&HE7)=0 THEN CLS:PRINT
"MUST BE ON HIGH RES SCREEN":END
100 OV=&HD800:W=PEEK(&HFE04)/4:C
=1/256
110 FORJ=1TO24:OV=OV+W:T1=OV*C:T
2=INT(T1):FORI=1TO7:POKE&HFF9C,I
:FORT=1TO10:NEXTT,I:POKE&HFF9E,&
H100*(T1-T2):POKE&HFF9D,T1:POKE&
HFF9C,0:NEXTJ
120 CLS:POKE&HFF9D,&HD8:POKE&HFF
9E,0
130 ' FLICKER CAN NOT BE AVOIDED
 IN BASIC
140 ' HRES CHARACTERS ARE 8 LINE
S HIGH
```

```
10 ' BASIC PROGRAM             VE
RY SLOW
20 'TO SCROLL PMODE4 SCREENS BY
REDRAWING SCREEN
30 'ST= START OF PMODE SCREEN
40 'EN= END OF PMODE SCREEN
50 'CO=0 FOR BLACK, 255 WHITE
60 POKE&HFF9D,0:WIDTH32:PCLEAR4:
PMODE4,1:SCREEN1,1
70 PCLS1:FORY=0TO191STEP10:LINE(
0,0)-(255,Y),PRESET:NEXT
80 FORY=191TO0STEP-10:LINE(0,Y)-
(255,191),PRESET:NEXT
90 ST=PEEK(&HBA)*256+PEEK(&HBB):
EN=PEEK(&HB7)*256+PEEK(&HB8):CO=
255
100 A1=31:A2=32:A3=33
110 ' THE MAIN CODE LOOP
120 FORK=&H1 TO &HC0
130 FOR I=ST TO EN-A3:POKE I,PEE
K(I+A2):NEXT
140 FOR J=I TO I+A1:POKE J,CO:NE
XTJ,K
150 ' COCO 1&2 OWNERS OMIT > POK
E&HFFD9,0:WIDTH32 <
160 '                    USE  > PO
KE&HFFD7,0 <
```

```
10 'SCROLL PMODE4 SCREEN USING G
IME CHIP REGISTERS
20 WIDTH32
30 ' CLEAR SECOND GRAPHICS SCREE
N
40 PCLEAR8:PMODE4,5:PCLS1
50 '
60 ON BRK GOTO 240
70 PMODE4,1:SCREEN1,1
80 PCLS1:FORY=0TO191STEP10:LINE(
0,0)-(255,Y),PRESET:NEXT
90 FORY=191TO0STEP-10:LINE(0,Y)-
(255,191),PRESET:NEXT
100 VG=(458752+PEEK(&HBA)*256+PE
EK(&HBB))/8:C=1/256:OV=VG
110 T=OV*C:B1=INT(T):B2=256*(T-B
1)
120 POKE&HFF98,128:' SET GIME TO
 GRAPHICS MODE
130 POKE&HFF99,8:' SET GIME TO 2
56 WIDTH, 2 COLORS
140 POKE&HFF9A,63:' WHITE BORDER
150 PALETTE0,0:PALETTE1,63:' MAK
E HRES COLOR = PMODE4 COLOR
160 POKE&HFF90,&H4C:' ACTIVATE G
IME CHIP AT WIDTH 32
170 POKE&HFF9D,B1:POKE&HFF9E,B2:
' SET INITIAL VDG OFFSET
180 FORI=1TO192
190 T=OV*C:HB=INT(T):LB=&H100*(T
-HB)
200 POKE&HFF9D,HB:POKE&HFF9E,LB
210 OV=OV+&H4:NEXT
220 PCLS1:POKE&HFF9D,B1:POKE&HFF
9E,B2
230 GOTO230
240 RGB
250 ' OV=VG= VDG OFFSET
260 ' $BA-$BB START OF GRAPHICS
SCREEN
```

```
10 'SCROLL PMODE4 SCREEN WITH ML
 CODE AND NOT GIME
20 POKE&HFFD9,0:WIDTH32
30 CLEAR200,&H7EFF
40 FOR M=&H7F00 TO &H7F30:READ A
$:POKE M,VAL("&H"+A$):NEXT
50 DATA FF, 1A, 50, C6, C0, E7,
8D, 0 , 28, 10
60 DATA 9E, B7, 31, A8, E0, 34,
20, 9E, BA, EC
70 DATA 88, 20, ED, 81, AC, E4,
25, F7, B6, 7F
80 DATA 0 , 1F, 89, ED, 81, 9C,
B7, 25, FA, 6A
90 DATA 8D, 0 , 6 , 26, E4, 1C,
AF, 35, A0
100 DATA AC, E4, 26, F7, B6, 7F,
 0 , A7, 80, 9C
110 DATA B7, 26, FA, 5A, 26, E9,
 1C, AF, 35, A0
120 PCLEAR4:PMODE4,1:SCREEN1,1
130 PCLS1:FORY=0TO191STEP10:LINE
(0,0)-(255,Y),PRESET:NEXT
140 FORY=191TO0STEP-10:LINE(0,Y)
-(255,191),PRESET:NEXT
150 POKE&H7F00,255:' SET BACKGRO
UND COLOR 255=WHITE 0=BLACK
160 EXEC&H7F01
170 GOTO170
180 ' COCO 1&2 OWNERS OMIT  > PO
KE&HFFD9,0:WIDTH32 <
```

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```
000 *           ASSEMBLY PROGRAM TO SCROLL PMODE4 SCREENS
001 *
100         ORG   $7F00     ADJUST TO SUIT
110 *ROUTINE TO SCROLL A PMODE4 GRAPHICS SCREEN
120
130 COLOR   FCB   255       COLOR CODE TO BE LOADED FROM BASIC
140 *                       DEFAULT COLOR IS WHITE
142 START   ORCC  #$50      TURN OFF INTERRUPTS
150         LDB   #192      LINES PER PMODE4 SCREEN
152         STB   COUNT,PCR
160         LDY   $B7       END OF PMODE GRAPHICS SCREEN
170         LEAY  -32,Y     ONE LINE SHORT FROM END
180         PSHS  Y         SAVE IT FOR FUTURE REFERENCE
190 LOOP1   LDX   $BA       START OF PMODE GRAPHICS SCREEN
200 LOOP2   LDD   32,X      GET 2 BYTES DATA FROM NEXT LINE
210         STD   ,X++      STORE IT IN CURRENT LINE AND MOVE POINTER
220         CMPX  ,S        COMPARE WITH LAST LINE TO MOVE
230         BLO   LOOP2
240         LDA   COLOR
242         TFR   A,B
250 LOOP3   STD   ,X++      CLEAR 2 BYTES OF LAST LINE ON SCREEN
260         CMPX  $B7       END OF SCREEN?
270         BLO   LOOP3
280         DEC   COUNT,PCR REDUCE COUNTER UNTIL ZERO
290         BNE   LOOP1
292         ANDCC #$AF      TURN ON INTERRUPTS
300         PULS  Y,PC      GO BACK TO BASIC
302 COUNT   RMB   1
310         END   START
```

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window that could be active even while Window1 or 2 is active. Such a feature would be able to precompile reports while the main program was doing it's normal processing. As such, there would be no delay before printing reports. That also means the reports could be displayed at any time since they would always be in the compiled form. In addition the manual needs to be amended for clarity, but Danosoft is a new company and Big BASIC is a new program. I'm assured the manual will be improved with each printing.

C.C.B.M.S., the business program series printed in *CoCo Clipboard*, has been put on Big BASIC. The speed of index searches and module changes is as fast as anyone could want, equal to professional programs running on multi thousand dollar business machines. Big BASIC does it's intended job very well.

Big BASIC adds much needed quantity with speed to the RS-BASIC programmer's arsenal. Any serious RS- BASIC programmer should put Big BASIC on his list of "must have" programs.

MVCanvas 2.0 - OS-9 Paint Program

Finally, a professional OS-9 Level II paint program is available for the Color Computer 3. **MVCanvas** not only supports true windows, **MVCanvas** is the **ONLY** Color Computer graphic editor that gives you more choices than just a 320 by 200 pixel, 16 color graphic resolution. *

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CoCo 'N Amateur Radio

Jerry Murphy K8YUW

Since the last copy I sent Ted about my shack, there have been a few changes. The National Weather Service wants me to provide a backup function to one of the other ham radio operators involved in the Hurricane Communications plans, but the program they are customizing for my use is only suitable for an IBM-compatible machine. There were none in my collection until a few days ago. I picked up a used 1000 SX, but only because I need it for that particular program; I hope the OS-9/UNIX /XENIX community will forgive me for this indiscretion. I had to sell the Model II to help fund this new acquisition.

There have been a number of tropical weather events this year, and during each one my ham radio station communicated between the National Hurricane Center in Coral Gables, FL and people in the affected areas. The Coco3 with WizPro played a part in each. There is a commercial radio station in Mobile, AL (WLO) that transmits weather broadcasts to ships at sea, (and eavesdroppers like me!), using both CW and SITOR/FEC. SITOR and AMTOR are almost identical. We hams use AMTOR (AMateur Teleprinting Over Radio), and normal commercial channels use SITOR (SImplex Telex Over Radio). Both modes are nearly identical for our purposes, so we will just stick with the one I use: AMTOR. This mode is a synchronous transmission of seven-bit code that essentially provides error-free messages.

At either end of a connection over telephone wires, we already know we need a modem (MOdulator/DEModulator). Similarly, in ham radio work using computers there is need for a modem of some sort at either end. We call these devices Terminal Node Controllers (TNC's). The simplest TNC provides an interface allowing the computer to communicate with the transmitter and receiver such that packets of 128 bytes are sent or received as a group; the length of the packet is adjustable in some units. Each packet is inspected by the receiving end to see if the CRC received as part of the packet agrees with the CRC measured by the receiving computer. The receiving site sends either an ACKnowledgement or a Negative AcKnowledgement (ACK/NAK). A NAK results in the packet being sent again by the transmitting site. This abbreviated description applies specifically to packet radio, but understanding this simple exchange helps in the understanding of one of the two types of AMTOR, with some modification.

One of the two types of AMTOR is called ARQ, and the other is FEC. We'll get ARQ out of the way first, then expand on FEC, which is the mode I use to receive weather advisories. ARQ is called Mode A, and depends on a ReQuest for repetition from the receiving site. Messages are sent in groups of three letters in 210 milliseconds. Then the transmitter pauses for 240 milliseconds, listening for the acknowledgement or request for retransmission. If it receives an acknowledgement, it sends the next three letters; if it instead gets the RQ, it re-sends the same three letters. Should the communications path break down due to interference or fading signals, the two operators immediately know exactly what the other system has sent or received so far in the exchange; neither CRT displays non-acknowledged groups. On the air, it sounds like a fast chirp-chirp-chirp.

The second AMTOR mode is Mode B, Forward Error Correcting (FEC). In this mode, the transmitter sends a continuous stream of characters in a synchornous manner, sending each character twice, but with an offset of 280 milliseconds. Another way to say this is to send a character, then four more characters, then repeat the first one, etc. An interleave ratio of 4:3 is maintained between marks and spaces. Prior to the message, there is a string of 10 idle characters, another string of 5 idle characters is inserted following each group of 28 letters for synchronization purposes. While a noise spike might take out the first occurence of a character, it is unlikely that a spike will get both of them with 280 millisecond repetition. The TNC keeps track of all the checking and comparing of characters, as well as the synchronization signals. The end result is much more accurate text received than was possible with the older Baudot methods of sending Radio TeleTYpe. But at these speeds, no mechanical machine could hope to keep up with the data stream, nor could it do the CRC

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checking required; a computer is a necessary part in all of this, and the Coco is ideally suited for the purpose if it has a proper terminal program.

The various transmissions I receive come basically from three sources. The American Radio Relay League sends bulletins of interest to amateur radio operators nearly all day, almost every day, on several different frequencies. They use Sideband, CW, Baudot and FEC on most of their schedules. Consult QST magazine for their complete schedule, but look for them basically on 3.625, 7.095, 14.095, 21.095 and 28.095 MHz for both Baudot and FEC at various times of day and evening. WLO in Mobile, AL uses carrier frequencies of 4352, 6499.5, 8707.5, 13083.5 and 17199.5 KHz, nearly around the clock for their SITOR transmissions; many others use SITOR, and most are found very close to these frequencies. Additionally, you'll find radio amateurs ragchewing or passing traffic to one another close to 3638, 7075, 10143, 14075, 21075 and 28075 KHz. It helps to use a tuning device such as an oscilloscope to zero in on their frequencies; look for a pair of crossed elipses, looking much like a "+". You'll need a radio receiver, a TNC of some type that includes AMTOR in its repetoire, and a computer with terminal program as a minimum to listen in on any of this.

In the next installment, I'll delve more into packet radio. This mode, too, requires a TNC and computer terminal. With a common Model 100 and TNC hooked up to your VHF radio, you can exchange packet radio messages with hams all over the world, sometime in the near future via orbiting satellites!

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One Meg. Upgrade

Kevin Darling

Reason For The One Meg. Upgrade

The first thing hackers say when they see a new machine, is "how do I expand it even more?" While 512K has been very useful under OS-9 L-II, the rule of thumb in computers is always "ya never have enough RAM".

If RAM prices hadn't gone sky high for a year or two, I think we'd have seen 1 meg upgrades long before now. The technology to do it has always been around, but the cost would've been too much until just lately.

Anyway, that's something for the business types to haggle over. Instead, this is just a short history of the Disto upgrade. What happened was something like this:

Back in May of 1989, I got a couple of calls from CoCo third party suppliers who had come up with 1 meg designs. However, both had come up with simple bank switching schemes, which wouldn't work under OS-9 (two banks of 512K each).

So I started writing up a tutorial on what hardware would be needed to build a usable external DAT (Dynamic Address Translator) for the CoCo-3. My original intention was to post that text, and anyone who wanted to actually finish the ' minor details and build one could go ahead and do so.

Before I could post it, I got another call. This time it was Tony DiStefano, who complained that he was bored and needed a project. As usual <grin>, I tried to talk him into doing a color video digitizer. Also as usual, it didn't go over. I happened to mention the DAT idea, and he DID click on that. I described what had to be done, and sent Tony my idea file. I don't think he needed it, as he understood the basic concepts. All I had to do was specify where certain special registers should be.

It wasn't a rush project at all. RAM prices were still falling, and we all tell ourselves that "the RainbowFest is a long time away" <smile>. Tony worked on it now and then, a few minutes a week, the whole way.

So a couple of months later, Tony called and said that he had found time to draw up a complete design. Weeks after that, he found time to make a wired prototype of the main board, and it seemed to take the correct data. Later on, he finally got around to adding in the extra 512K RAM, and was ready for testing. It seemed to work, but he wanted to change some things.

The First Prototype

Finally, one Saturday he called and said "It's running, and seems to work under RSDOS testing. Now I need OS-9 patches!". And I hadn't even looked into this yet. Ouch! The rest of the night I spent studying the kernel code and creating a new version for him to try. Turned out to be easier than I thought, really. Sunday night he tried the first version, and it failed. Drat. I found my mistake and sent him new files.

Monday night, he got the new files and booted up into L-II.. but with no video. He wasn't sure it was working, so I had him do a "mfree >/p" to see. Sure enough, out came "904K free"... hot dog! A few minutes later we figured out that he hadn't included my new Grfdrv. After changing that, he then booted again and everything worked perfectly. We were pretty excited!

We announced our success on the networks the next day, Sept 18, and by morning, CRC was getting calls from people wanting to get in line for the upgrade, and it wasn't even for sale yet!

Knowing I wanted to do further testing (and also not being able to stand the wait - hehe), Tony shipped this first board off to me. But it wouldn't work on my machine! I dug out my soldering iron for the first time in years, and spent almost a week redesigning the board, until finally it worked on my CoCo.

When I called Tony to tell him, it turned out that he had ALSO spent the time redesigning his second board... and incredibly, we had BOTH come up with the same final circuit! That made us feel better... everything seemed solid.

The Results

I've been using this board now for over a month, with zero problems. In fact, my

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"sparklies" went away, and I had tried every known fix with no success! Apparently, the 1 meg upgrade also solved some timing problems, without our knowing it.

The upgrade plugs into a header which you must solder to the top of your 6809 cpu. From there, one wire goes to a new 512K RAM board which plugs in just under your original 512K upgrade. A few patches to OS-9's kernel and graphics drivers, and you're done. I think the production board will use an external power supply, but I've been running fine without one here, since I also use a CMOS low power 6309 cpu.

The original had 15 chips, but the production version should only have about 6, due to using a PAL for much decoding. There's 4 tiny high speed RAMs on board that serve to store the extra bits needed to extend the GIME DAT for 1 meg access. In addition, there is a register at $FF9B for setting which bank is the video RAM.

I can tell you right now that I'm in love with one meg. I preload many more commands, and am able to open LOTS more hires graphics screens. It's another order of freedom. Those who use internal RAMdisk software will love it, too.

There are more projects like this being worked on now, and I can see that OS-9 users have a great deal of exciting hardware and software to look forward to in the near future! You RSDOS readers need to take a cue!

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Painless OS9

Randy Krippner

Occasionally I get some pretty interesting comments and questions from readers. While I reply to everyone who writes, I normally don't have space to respond in the magazine. But since some of the questions or comments might be of interest to other readers, we decided to publish some of them this month.

Q. Whenever I try to open a graphics window under OS9 the text disappears. All I see on the screen are dots.

A. Graphics windows have no predefined character fonts. You need to merge the STDFONTS file in the SYS directory to provide the graphics windows with a character set to work with. Just add a line to your Startup file to merge the STDFONTS file whenever you boot up. Once the STDFONTS are merged with the system, they are available to any graphics window from then on. A line like "merge /d0/sys/stdfonts" in your Startup file should do it.

Q. When I upgraded to a Coco 3 and OS9 Level 2 I found that T/S Edit and many other of my Level 1 programs that used a hi-res graphics screen would no longer work. I know they will because other people have talked about using them. What am I doing wrong?

A. T/S Edit and other Level 1 programs that create a hi-res graphics display screen require the old VDG display mode. If you use Config to create a boot disk that comes up in the 40 column mode, Config may not be including the VDG drivers in your boot file. Without the VDG drivers, T/S Edit and other software that requires the old Coco II graphics modes won't work.

Make a new boot disk using Config, and this time select the 32 column display mode. T/S Edit should run fine from it. If you need the 40 or 80 column displays, you can always create a new device window using the desired display format.

Q. I just bought OS9 Level 2 and Multi-Vue for my 512K Coco 3. I also have the C compiler. The Multi-Vue documentation mentions a file called CGFX which is supposed to add Level 2 graphics commands to C, and several C header files that have the definitions for accessing Multi-Vue, the mouse and windows. But no such files are on the Multi-Vue disks. Where are they?

A. For reasons known only to Tandy, the C files described in the MV docs are located in the OS9 Level 2 Development System (Cat. # 26-3032, $99.95) while the documentation that explains them is bundled with Multi-Vue.

Q. I've recently seen something called "Forth09" being sold for the Coco, and didn't really understand what they were talking about. What does this program do?

A. Forth09 is a programming language based on Forth, a language developed by Charles Moore back in the 1970s. Several versions have been offered for the Coco over the years, this one from P.D. Johnson being the most recent.

Forth is different, and definitely is an acquired taste. If you're used to high level languages such as Pascal, Basic09 or BASIC, it will take you some time to get used to Forth's radically different philosophy. Before you take the plunge, I suggest you get a book called Starting Forth by Leo Brodie to get an idea of what it is like.

Q. Why do the Coco 3's hi-res graphics take up so much memory? I was very surprised when I found out how much disk space a 320 X 192, 16 color picture took up when I read your articles about Deluxe Power Graph.

A. The 16 color, 320 X 192 graphics mode requires about 30,700 bytes of storage space. In this mode there are 61,440 pixels on the screen. Each pixel takes up 4 bits, or one half of a byte (usually called a nybble.) of storage space. Why 4 bits? Well, 4 binary digits can be used to represent any number between 0 and 15, for a total of 16 different values, which just happens to correspond to the 16 different colors the C3 can display in this mode.

That's why color graphics take up so much memory. Not only does the computer have to know which pixels should be set, it has to know what color the pixel should be set to. The more colors the computer is capable of generating, the more space each pixel will take up. If we were working with a computer that could handle 256 colors, for example, each pixel would take up a full byte of space.

Q. Can the Color Computer 3 be expanded beyond 512K?

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A. Yes and no. The Coco cannot directly handle more than 512K without completely redesigning the computer. Some companies do market RAM expansion cartridges or internal circuit boards, but these devices are used as RAM disks, which simulate very fast disk drives.

Q. Why didn't you use Multi-Vue's menuing capabilities in your icon editor program or Deluxe PowerGraph?

A. If you take a look at Dale Puckett's OS9 column in the July, 1988 issue of Rainbow you'll see why. He set up all of the Basic09 data types necessary to access MV's menuing system in that issue, and took almost 150 lines of code to do it. The fact of the matter is that any competent Basic09 programmer could write his or her own auto-menuing utilities using Basic09 and the GFX2 module, and could end up with a utility that is almost as fast, a heck of a lot easier to use, and which takes up less memory than is required to access Multi-Vue's menuing system.

Q. Do I really need the CM-8 monitor for the Coco 3? I can't see spending $300 on a monitor for a $140 computer. Could I use one of the cheap IBM type monitors on it?

A. The type of monitor you should buy depends on what you're going to do with the computer. The Coco 3 has three types of video outputs: standard TV output like the old Coco II, composite output for composite monitors, and RGB output for analog color monitors such as the CM-8.

The analog monitors such as the CM-8 are nice, but not really necessary. If you are going to be doing a lot of work in the 640 X 192 graphics mode or use a program such as Window Master, which uses even higher resolutions, then an RGB monitor is a good idea because of problems with overscan. For most Coco 3 graphics programs and games, a color TV or inexpensive color composite monitor works well. If you do a lot of word processing, then a composite monochrome monitor is probably the best choice.

You can't use TTL (IBM type) monitors on the Coco.

Q. I've been trying to find the OS9 Pascal and C compilers for OS9, but haven't had any luck. My local Radio Shack says they can't get them any more. What happened to them?

A. To the best of my knowledge, Tandy no longer carries the Microware Pascal compiler. You might find it available at bargain basement prices at some R.S. stores, but once those are gone, that's it. The only Pascal compiler still left on the market for the Coco is Deft Pascal from TCE, and it runs under RS-DOS, not OS9. It is, however, an excellent compiler. You can contact TCE at (301) 963-3848 or (800) 4TC-4TCE.

The Microware C compiler is, I'm told, still available, but is not normally carried by Radio Shack stores and must be ordered. Again, keep your eyes open. The normal retail price is around $99, but I picked up a copy a few months ago on a "manager's special" for $30.

Editors Note: Tandy still has the PASCAL program available for the CoCo from its Express Order Software Division. The stock number is 26-3034. You can order through your local Radio Shack store or call 1 (800) 321-3133.

Next time I'll wrap up a few loose ends in the final installment of Painless OS9. Yep, that's right. Painless OS9 has just about come to the end of its usefulness. A column like this could go on just about forever, I suppose, since OS9 is such a rich, powerful operating environment. But Painless OS9 was intended to assist newcomers to OS9, and as our motto goes, 'no one is a novice forever.' If you've been following along since the beginning, you certainly are no longer a novice.

As always, if you have any questions or comments, please write. Include an SASE if you want a reply. You can reach me at: Randy Krippner, 1014. W. Hwy. 114, Lot 29, Hilbert, WI 54129.

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EDT/ASM III is a Disk based co-resident Text Editor & Assembler. It is designed to take advantage of the new features available in the CoCo-3 with either 128K or 512K of memory. It has 8 display formats from 32/40/64/80 columns. There is also a free standing ML Debug Monitor.

EDT/ASM III has the most powerful, easy to use Text Editor available in any Editor/Assembler package for the Color Computer.

- Local and Global string search and/or replace.
- Full Screen line editing .
- Easy to use Single key editing commands.
- Load & Save standard ASCII formatted files.
- Block Move & Copy, Insert, Delete, Overtype.
- Create and Edit files larger than memory.

The Assembler features include:

- Supports Conditional IF/THEN/ELSE assembly.
- Supports Disk Library file up to 9 levels deep.
- Supports standard Motorola directives.
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- Allows assembly from the Buffer, Disk or both.

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